ELECTRICAL WEST

WITH WHICH IS CONSOLIDATED THE JOURNAL OF ELECTRICITY

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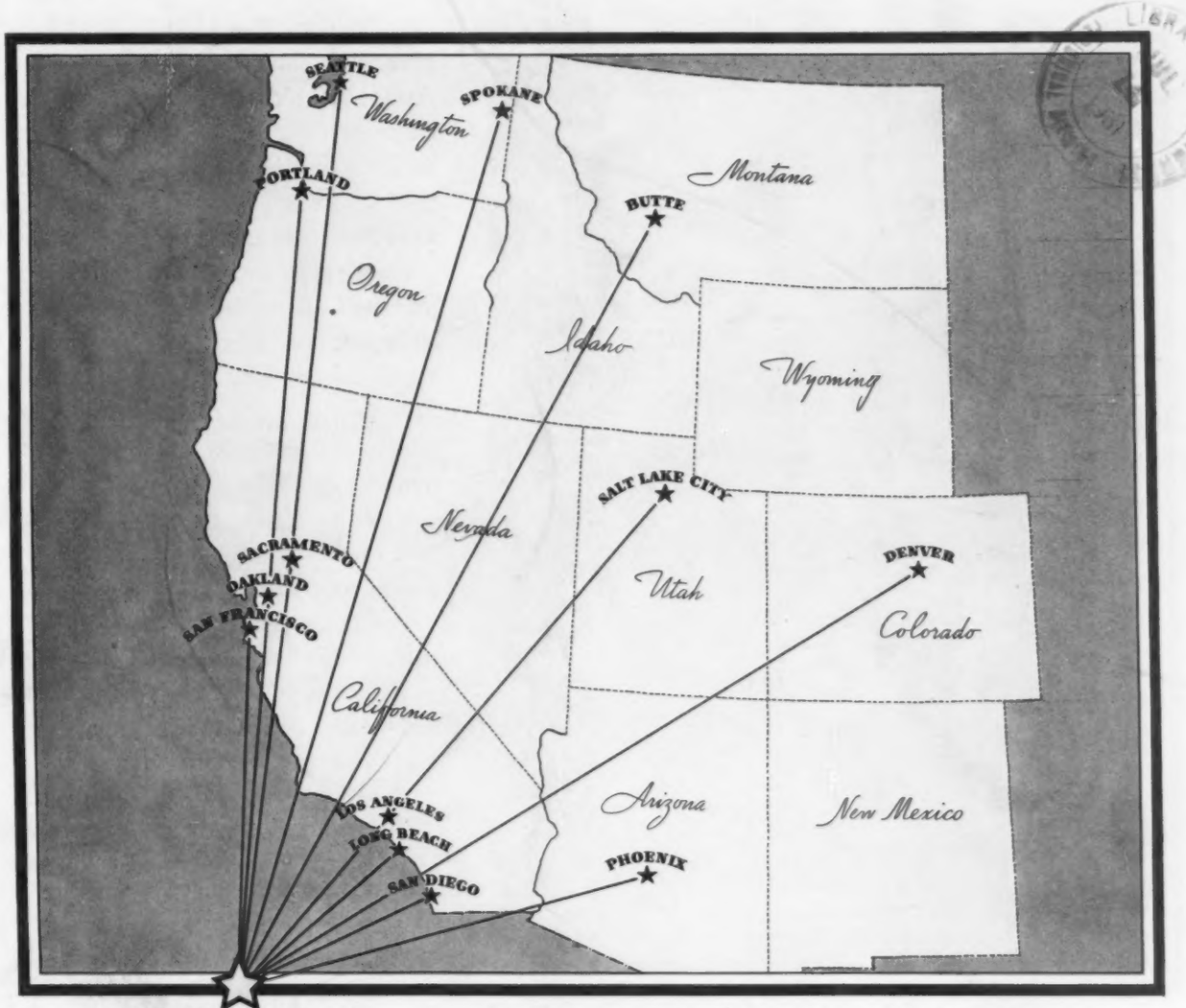

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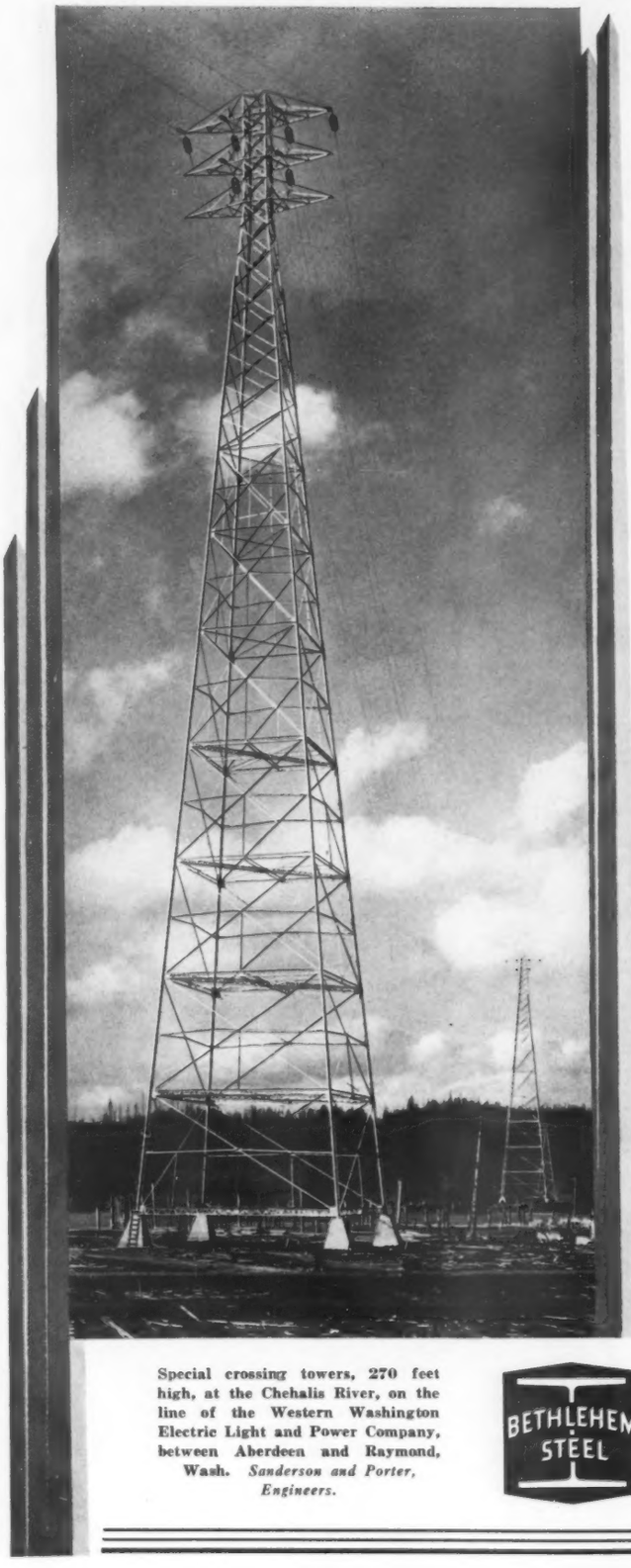

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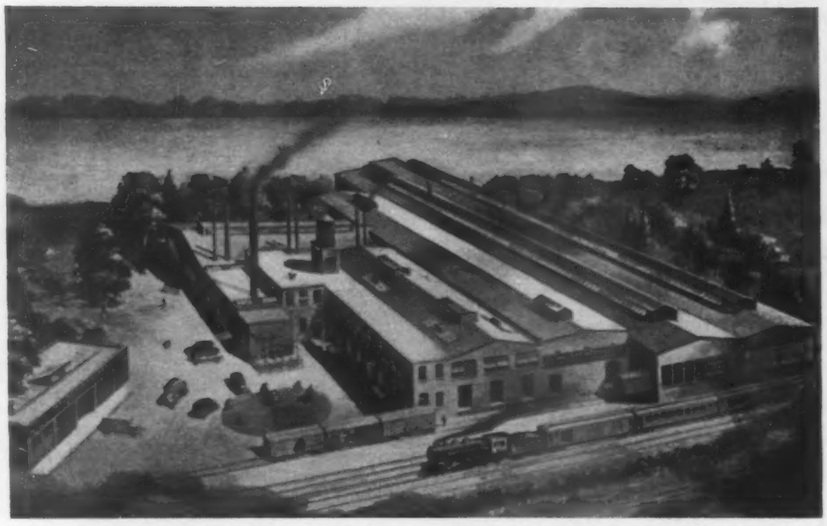
A New Alliance

Two Old Companies Get Together—



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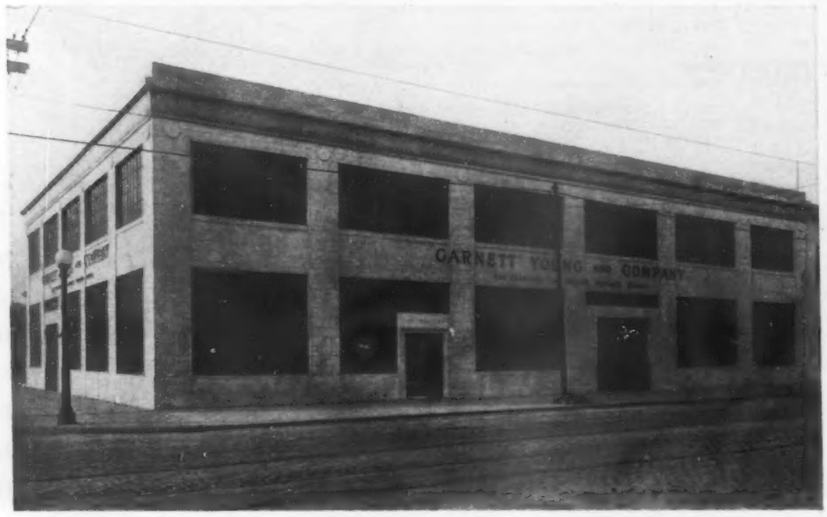

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G. C. TENNEY, *Editor*

The Challenge Of the Convention

AFTER years of attention to financial, engineering and commercial problems, the human beings who serve and the human beings who use electricity were given an inning. A Western convention of Western electrical people dipped into depths and rose to heights never before reached in the study of the human equation.

▼

A PRESIDENT'S report that threw oratorical pose to the winds and was just plain sense; a noted publicist who told how man must learn to live in a machine age, with special accent on living; a secretary's report that showed second highest numerical membership and highest percentage of members to employees among the thirteen geographic divisions; a treasurer who told his finances in terms of "where it comes from, where it goes, and what's left,"—these started the convention from the ground floor.

▼

REGULATION spoke a warning and suggested conference rather than legal contest. A champion of the utilities aroused the industry to militant defense against the *saboteurs* of public ownership whose wooden shoes they would throw in the efficiently running generators of private initiative. The Bureau burlesqued the Brookharts and Norrises and told the story of its remarkably effective development work in reverse English.

▼

N.E.L.A. officers brought substantial additions to their usual offerings of greetings. A commercial chief told of the fortunes to be made not in hot but in cold air. The managing director outlined the prospective year's power prospects. New President Owens sounded responding chords in the human aspects of employee development, stabilizing of employment, and relations with merchandisers of appliances.

▼

PURCHASING and Storesmen and Transportationists turned movie producers to teach the meticulous attention they pay to operating detail and how closely they guard human safety.

Editorial

ACCOUNTANTS audited their year's reports and then presented as unaccountable a statistician as a fig grower to debunk the depression and restore cheer. The Women reviewed their status in the industry and then demonstrated their usefulness as trained interpreters of policy and courtesy.

▼

ADVERTISING-Publicity men laid bare the ribs of the umbrella of good will which guards the industry against storms from outside, and then presented four linemen as radio ambassadors of common sense and reason to the court of public approval.

▼

ENGINEERS who, with typical thoroughness exhausted the subject of heavy circuit breaker design and heard of the significance of Einstein's recent work, pictured a dynamic America resulting from the labors of engineers.

▼

COMMERCIAL men listened to a progress report on the million refrigerator campaign, to an eloquent plea for originality and appropriate revolution in design of new appliances, to one who sells scattered rural customers in six states 1,800 kw.-hr. per residential consumer, and to a flight on a substantial scientific plane into the electro-chemical, electronic future. At a general session they pioneered a new lighting idea and cataloged the reasons for continued commercial drive.

▼

FINE as the program proved to be, as inspiring its speeches, instructive its plays, diverting its entertainment, as courage evoking and humanizing as it was to those who were fortunate enough to attend, its real test of success must be in the application of the lessons, the carrying home of the messages, the actual setting to work of its workable ideas and methods. This is the challenge of the convention. It is one which the electrical industry, in all of its branches, in all of its phases, will accept with its usual enthusiasm, will face with its usual trusteeship.

Popularizing Regulation In Oregon

OREGON'S new public utilities commissioner seems to have committed himself to a policy intended to make state regulation popular with the public. During the past month he has issued three orders for rate reductions, two covering light and power rates in the territories of two companies, and one reducing street railway fares in Portland. Apparently he is bent on allowing the companies the bare minimum return which he thinks will withstand legal attack. So far he is batting 0.667, since only one of the three orders, namely the street railway case, was taken to court.

The commissioner's orders lack the scientific flavor desired and expected by the accountant, the engineer, the attorney and the operating executive of the utility company, but they have a practicality that undoubtedly will appeal to the public. Questions of value and rate of return are complex enough in their simplest terms to preclude the possibility of their being made comprehensible to the public at large through any medium, but reams of publicity favorable to the department can be broadcast under the headline, "Commissioner Slashes Power Rate," which is as plain to the layman as "Police Catch Love Nest Murderer."

Undoubtedly the public believes that successful regulation means rate reduction by positive action of the regulatory body, regardless of the economics involved. If the commissioner's orders do not threaten the industry with ruin so that resort to the courts must be taken, he may be able to restore a somewhat impaired public confidence in state regulation in Oregon, which might reasonably be expected to forestall the dangerous tendency toward government ownership evidenced at the last election.

Sports Lighting Now Needs Only Artificial Sunshine

NIGHT sports have taken their place as a definite factor in the recreational program. Reflect for a moment on the recent developments in outdoor illumination for night sports. From a modest beginning, consisting of a few experimental installations, in three years this new form of applied electricity literally has swept the country. In practically every community some local sport has come under the sway of the electric light. Typifying the modern installation of sport lighting for night play is the new Seals Stadium in San Francisco, characterized as the best lighted baseball diamond in the world. Here daylight intensity of illumination is faithfully reproduced by electricity, evening games permitting the attendance of those whose occupations preclude the possibility of enjoying daylight contests.

All forms of sports—baseball, football, hockey, tennis, swimming, and even golf—have been played successfully under artificial illumination, artificial not in the intensity of the light produced, but only in the substitution of an electric lamp for the solar source of illumination. Admittedly, the quality of the light lacks the ultra-violet component of sunlight, but supplying this may be a realization of the near future with the rapid development of the sun lamp.

Modern engineering has conquered, and will conquer, the most difficult problems that night sport lighting can offer. Further developments await only aggressive action on the part of the power company, the dealer, the contractor, and the manufacturer to secure this potential business which the science of illumination has made available.

Time to Develop Electric Water Heating

ELECTRIC water heating deserves more attention than it is getting from the utilities at the present time. Here is a domestic service that will increase annual consumption by upwards of 4,000 kw.-hr. at a time when commercial managers are frantically searching for more load. Along with cooking and refrigeration, hot water service is an essential of the modern household.

Lack of progress to date in the development of water heating load has been largely traceable to the inability of utility executives to answer the question, "What is the best system of electric water heating for my company to promote?" And the executive has had as many systems to choose from as there were opinions, ranging from manually-controlled, high-wattage, small-water-capacity types to low-wattage, large-capacity, uninsulated, flat-rate installations.

In the final analysis, there are certain requirements which an electric water heating installation must meet before it can be satisfactory to both utility and consumer. The first essential is 100 per cent hot water service to the consumer. A second requirement is reasonable first price and an operating cost that is competitive with other types of water heating. From the standpoint of the utility the water heater must have desirable system load characteristics and must bring a reasonable and profitable return.

It is questionable if any system of water heating will be judged perfect when all of the foregoing tests are applied. However, great strides have

been made by the manufacturers within the last few months and at least one manufacturer has devised a system that meets most of the previous objections of both customer and power company.

Every electric range customer is a prospect for electric water heating. There are power companies on the Pacific Coast with from 10,000 to 35,000 range consumers who depend upon some energy other than electricity for hot water. Whether a slide rule or a Chinese abacus be used to compute the additional kilowatt-hours that water heating would bring from these consumers, the simplest answer is that here is a load worth developing in a hurry.

Boulder Dam And Employment

SCARCELY two months begun, the government project at Boulder Canyon to dam the Colorado River for flood control, water and power has already taken on some of the aspects of all political projects. In the case of this work the steady booming of publicity over a period of many years is partly responsible. "Uncle Sam" was going to undertake the most gigantic, the most superlative project ever conceived, according to the publicity.

If mobs of unemployed took all this publicity seriously and regarded the work as the promised manna from Heaven, they are hardly to be blamed. Even as the sense of proportion of the staunch advocates of this public project has been warped by enthusiasm instead of balanced by engineering considerations, so is the public's sense of proportion distorted as a result of the ballyhoo.

At the government-controlled little military camp, Boulder City, everything is shipshape. The contractors and their crews are well housed and provided for. But from the fringes of the project, in squalid camps as well as in the new boom town of the desert, Las Vegas, reports of the conditions already indicate the results of deplorable overemphasis, overpublicity, super-hopes and super-promises of a new job bonanza.

Labor organs already register their protests against the conduct of employment and treatment of union labor in what these organizations have long sponsored blindly—government ownership.

One of these papers thus describes the onus of all such works, even those as new, as pure as that at Boulder Canyon:

(The contractors stated) "that they had to take care of their own former employees and in addition to that they had to satisfy senators, congressmen and others who were making demands on them to place their friends and constituents on the job."

Twelve thousand men, many with their families, idle, hungry, are waiting around on the desert for jobs. Some weeks ago there had been 2,600 personal applications made to the employment office. Registration began at the rate of 600 per week and still averages from 100 to 150 a week. "Last month we placed 87 men," says Leonard T. Blood, superintendent of the U. S. Employment Bureau.

If the West is witnessing a new gold rush, a political gold rush, is it not because of the real estate type of publicity by which a serious engineering project has been inflated in the name of "The People"?

Striking Parallel In Pulitzer Awards

AS ONE reads the recent announcement of the Pulitzer awards for journalism in 1930, a striking parallel is immediately apparent. Every winning item, and there are five of them, calls attention to some undermining influence or agency. Crime, corruption, graft, Russia, and a United States Senator were the subjects treated by these five men, resulting in the recognition of each as the best in his branch of journalism.

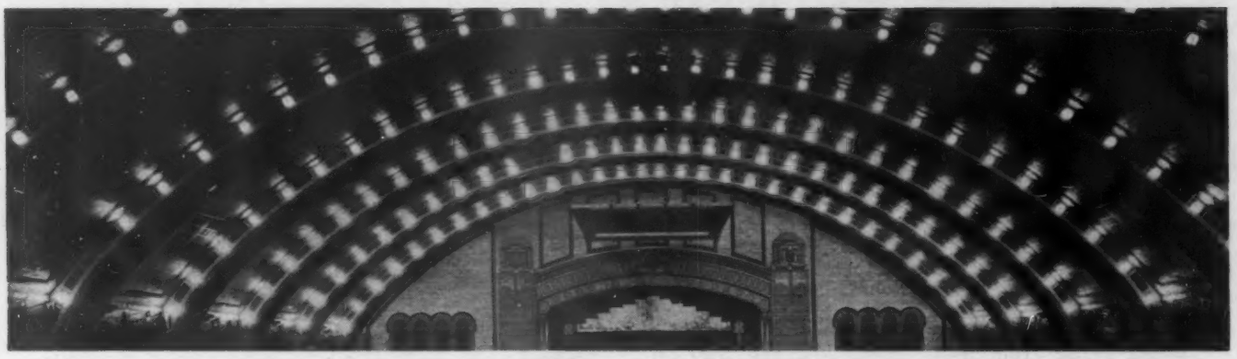
In addition to annual awards for the best novel, drama, verse, and biography, the Pulitzer endowment gives five prizes in the newspaper field for (1) the best public service rendered by a newspaper, (2) the best correspondence, (3) the best piece of reporting, (4) the best editorial, and (5) the best cartoon.

The first of these was won by the relentless exposure of municipal graft. The second went to a man who wrote a series of articles about Russia; the third to a reporter who solved a crime puzzle with the police bucking his every move. The fourth was an accurate picture of Senator Norris of Nebraska, and the fifth was a cartoon showing the futility of Russia in its attempt to wrest the Cross from the Church.

The critical appraisal of Senator Norris, whose every move is an attempt to shake public confidence in the established business institutions of America, gives the electrical industry a clear-cut characterization of "The Gentleman From Nebraska," who is attempting to make electric power a national issue.

One's faith in journalism is restored to see awards of the character of those granted under the Pulitzer endowment for journalistic achievement in 1930. The independent newspaper is still on the alert to detect the unseemly and is fearless in its exposure, challenging wrong and defending right.

Graft, chicanery, connivance, organized atheism and "The Gentleman From Nebraska" seem to be riding in the same boat and toward the same fate,—wreckage on the rocks of indignant public opinion.



"You Wanted to Hear About the N.E.L.A. Convention"

By Way of Variety, ELECTRICAL WEST Presents a Report of the Atlantic City Sessions in the Form of a Letter to the Editor From Edgar Kobak, President of the McGraw-Hill Company of California and Vice-president and General Sales Manager of the McGraw-Hill Publishing Company, Inc., New York.

Dear George:

You wanted a high-spot report of the fifty-fourth annual meeting of the National Electric Light Assn. for the readers of your paper, ELECTRICAL WEST. They deserve such a report and we hope what we have gathered will help the electrical industry in the eleven Western states toward greater prosperity. The convention was held at Atlantic City and most of the sessions took place in the Auditorium. There were some very early morning sessions, but as you did not ask for a report of that nature, we will not include our observations on the night life of an electrical executive. That is the time of day, or rather night, when most executives forget that they wear "brass" or "cork" hats and become human beings. That is when they are most natural, and if some of them could practice their public relations work as well during office hours as they do when they play, there might be fewer problems to be settled.

You asked for 3,000 words. I wonder if you realize that there were 80 speeches, and that someone forgot to hold the assembled speakers to a total of 3,000 words? Therefore, this report must consist of a few observations that we made during our most active stay at Atlantic City. If any of your good readers and friends want a more detailed report tell them to beg, borrow or steal a copy of the June 13 issue of the *Electrical World*, the July issue of *Electrical Merchandising* and the June 16 issue of *Power*. The editors of those publications covered this meeting just the way your crew covers the meetings of the P.C.E.A. and the Northwest association.

We thought that it might help the men from the Coast during these so-called hard times, if we sent you their pictures while "board-walking," so that they can get their expense accounts approved. Incidentally, the pictures will make this article easier to read.

PRACTICALLY every foot of floor space available for exhibits was taken. The manufacturers and others gave the convention the finest, most interesting and instructive show ever produced. The total attendance was down to 7,000 but the quality was high. However, because of this smaller attendance many manufacturers felt that their effort and expenditure were hardly worth while. This was particularly true of the apparatus group, and they were right in their views as there were comparatively few operating men and engineers in attendance. In fact, the program was weak from an engineering standpoint.

The exhibitors of load building devices were better pleased as there were more men present that were interested in their exhibits and more executives showed interest in commercial subjects than ever before. That is fine and we are glad to see this new interest at this time. It means that greater effort and understanding of load building problems are on the horizon. That means more customers and greater load per customer. However, someone must caution the N.E.L.A. at this time not to become suddenly sales minded and forget the engineering side of the business. Engineering progress has only begun; there is much obsolete equipment in service and executives must keep their thinking balanced between commerical, engineering and public relations problems.

The exhibitors will not buy space so freely next year unless the N.E.L.A. makes a greater effort practically to guarantee quality and quantity in attendance, just as publishers must guarantee circulation when selling advertising pages.

* * * *

OUTSIDE of smaller attendance there was no other indication that this is a depression year. The utilities and manufacturers are facing forward, they are unafraid, and this year is just a "check-up" year—time to take stock and to start forward with more vigor and intelligent planning for the good years ahead. The bright spot of this convention to me was the fact that no one talked "blue" or acted worried. Everyone was serious about his work and everyone showed signs of working and studying harder. It is a great thing for the individual and for the industry—yes, much as we hate to admit it, a hard year or two is good for the best of us and the electrical industry needed just such a period as this to look itself over. That is exactly what happened at this meeting.

* * * *

A NEW and militant policy was announced by President Jones on the most dominant subject of the meeting, public relations. The plan calls for constructive aggressiveness. We only hope that before the industry tackles this policy it will have the necessary facts and necessary diplomacy to counter the agitators and politicians. Paul Clapp in his talk furthered the policy laid down by the president. Other leaders took a similar stand. The talk by your fellow Westerner, W. C. Mullendore, "In the Public Interest," was one of the high spots of the meeting. He pointed out that tariff, armament and other national problems that demand solution are being neglected by the agitators to make an issue of the "power trust." Which makes me rise to ask, Just what is a "power trust"?

* * * *

Another oustanding contribution to the meeting was the address by J. F. Owens. He attacked the general business problem by saying that too much time is spent in placing the blame and not enough time in diagnosing how each component of business contributes to the situation. Mr. Owens faced issues in a thoughtful manner and we recommend a complete reading of his address. The industry can look forward with full confidence because once more they have chosen a president (Mr. Owens) who will do things, who will lead and will face in a fighting manner the many obstacles and problems that will confront the utilities during the next twelve months.

Market development received much attention—in fact, more intelligent attention than we have witnessed before at one of these annual meetings. The report of the refrigeration campaign was inspiring, and now we see similar efforts to build sales of ranges, water heaters and other devices. Trade relations show progress, according to reports made. Both the exhibits and the reports from the properties reflected the business possibilities in the home market. It looks like an aggressive sales year and the question is not whether the utilities should merchandise but *how* they should merchandise. It always bothers me when I hear experts and others insist that the central station should not sell appliances. My view has always been that the organizations in each community which are best equipped to sell, should sell, and that every type of outlet should be developed. I never did believe in holding umbrellas over anyone in business.

* * * *

IT WAS gratifying to hear several speakers advocate the completely electrically equipped home. It is coming and coming big, and at last central station executives appreciate its possibilities. Fortunately H. P. Liversidge bore down on one point—don't neglect the architect. (You know we are building a new sky-scraper in New York. Well, believe me, the architects do need attention. They fight for the color of the building but the electrical side seems incidental. We had one that fought for both, but he is the exception.) We were also glad to see emphasis put on the point that some of the small appliances were being neglected for the bigger ones. The industry needs a balanced selling job.

* * * *

ONE of the big hits of the convention from an entertainment standpoint was provided by another of your enterprising Westerners, Arthur Prager of Albuquerque, who brought some of the principals of what is now New Mexico's famous Indian drama, "The First American," all the way back to Atlantic City. The pageant they put on made an indelible "imprint" on every one. A lot of people who listened to you fellows' Western romance stuff with their fingers crossed have changed their minds since witnessing this spectacle.

* * * *

ANOTHER high spot was the Women's Committee session, which celebrated the tenth anniversary of this activity. In this short space of time has grown a nation-wide organization of women employees in the light and power industry, consisting of more than 800 committees. The scope of the work has gradually broadened until today the committee is responsible for the preparation and execution of plans for the education of women employees of electric utilities in all of the economic and social phases of the industry. The committee also is contributing very effectively to the campaign now under way to make this a nation of completely electrified homes. They must now organize as advisers in home making. More power to them!

* * * *

MARSHALL E. SAMPSELL outlined future plans for The Society for Electrical Development. If we know the new president of the S.E.D., we have a hunch that there is new hope and life for that important coordinating association. And Mr. Owens backed the idea

by stating that he was much in favor of an industry forum idea. The industry has such a forum and must learn to use it.

* * * *

UNFORTUNATELY the engineering side of the convention was small in number of papers presented and in attendance of engineers. However, the few papers presented were very good. We were glad to see that Chairman Alex D. Bailey pointed out that engineering development is not completed and that future developments will be just as important and big as they have been in the past. He cited rural electrification, new applications of power, lightning protection, studies in the use of steam, combustion of fuel, and standardization as problems only partially solved. We only wish that there were some way that we could show every member of the N.E.L.A. the development work going on in practically every electrical manufacturing plant in the country. There will be no cessation of engineering development, and executives must not drift too far from the origin of this great industry. Once more we say, watch the balance of the three points, engineering, commercial and public relations. We are afraid from what we have observed that engineering organizations of utilities are being reduced to small numbers. We admit that some men in engineering departments have gone to sleep, become lazy, but we must be sure that they are replaced with other men who will work and show progress. A utility that has an undersized engineering department for a year will pay the price several years later. It is just as foolish for central stations to follow this policy as it would be for the manufacturers to lay off their product engineers and cut out development work. Utilities are manufacturers and they must improve their product and its distribution.

* * * *

THURSDAY was Edison Day. It was a real thrill to hear Mr. Edison address the convention by telephone from Fort Myers, Florida. The conversation was as follows:

"Mr. Edison, this is W. Alton Jones, president of the National Electric Light Association. Seven thousand delegates gathered in convention in Atlantic City, and tens of thousands of members of the electrical industry all over the United States have paused to pay tribute to you, whose genius laid the foundations of this industry and whose character and example continue to be its inspiration and its guide."

Mr. Edison responded:

"I appreciate your greetings. My message to you is, be courageous. I have lived a long time. I have seen history repeat itself again and again. I have seen many depressions in business. Always America has come out stronger and more prosperous. Be as brave as your fathers before you. Have faith. Go forward!"

What a fine greeting, what a grand old man, and to think that he has lived to see the world grow around his many contributions!

* * * *

ANOTHER outstanding talk was the one delivered by C. E. Groesbeck. As a sample, read his last paragraph and you will get the drift. Mr. Groesbeck is for removing the brakes on prosperity. He said, "I take heart in the signs I see on every hand that the great, silent body of the American people, the earnest working, producing majority, is becoming alive to the fact that a minority is attempting to change their government and government's attitude toward their labors. When this silent majority expresses itself our representatives will listen. And the message they will hear will be emphatic and to the point. That message, unless I am mistaken, will be that government interference with private enterprise is paternalism, that taxation for paternalism is tyranny, and that an aroused and intelligent people will not permit this noxious growth to embarrass their progress and impair their prosperity." And my comments are, keep talking to the people and Mr. Groesbeck's remarks will prove truer than most people realize.

* * * *

JUST cannot help slipping in this paragraph. As you know, I attend conventions and meetings in many industries and they all have their problems. None of them seem to have any better problems than the electrical industry and none of them produce the array of leaders and the sound thinking and planning that is evidenced at an N.E.L.A. meeting. It is a big industry made up of big men, and a hard year plus some active politicians will do just two things—make a bigger industry and de-

It's good walking . . . on the perambulator drive, think P. G. and E.'s Wishon (right) and friend

RAY TURNBULL J. E. E. ROYER

Said Hotpoint's Turnbull to W.W.P.Co.'s general manager: There may be a couple of Westerners I haven't seen

P. G. and E.'s representation was large

P. M. DOWNING A. E. WISHON

A. H. MARKWART GUY BAYLEY

When P. G. and E.'s builder and a Sanderson and Porter engineer get together . . .

velop bigger men. Perhaps we had better arrange for a certain number of agitators to be on the job at all times just to help keep the industry on its toes. (Excuse the interpolation.)

* * * *

THE Virginia Electric and Power Co. won the Coffin Award this year. Some of the accomplishments during the past year were as follows: The number of customers was increased five per cent; the average consumption of energy was increased fifteen per cent; rural business was sought aggressively and the number of rural customers was increased forty per cent; a promotional rate for the development of domestic business was instituted, and through splendid engineering the system capacity was increased at a very low cost per kilowatt.

* * * *

James B. Black, one of your Western expatriates, pointed out that to proceed adequately in the development of new or partially developed fields it is necessary for the industry during the next ten years to raise not less than $7,500,000,000 in new capital, even ignoring reinvestment of reserves and surplus. Of this approximately $3,500,000,000 will no doubt come from the increase of long term debt, $2,000,000,000 from the distribution of common stocks, and $2,000,000,000 from the sale of preferred stocks largely through customer-ownership campaigns. Sounds like a lot of money and in these hard times I don't even feel like thinking about such numbers. Anyhow, it was a lot of fun to typewrite these figures.

* * * *

"GHOSTS" was the title of Edwin Gruhl's paper. It covered indefinite generalities charged against the power industry by irresponsible people. He gave the charges and outlined the answers. Good stuff—just another thing that made this meeting worth while.

Unfortunately, I could not remain for the Public Policy meeting on Thursday night and so did not hear Mr. Arkwright's address or the talk by Arthur Brisbane. But, fortunately, I heard Merle Thorpe drive home some of his sound epigrams. He said, "It is not a question of general business coming back, it is a question of bringing it back."

"There have been no less than a thousand remedies prescribed for the delayed business recovery," said Mr. Thorpe. "A review of all remedies leaves one clear impression: Most of us are seeking a short cut, an easy formula, usually legislative, that will restore General Business. Too few include mental and physical exercise in the prescription, along with the pill. We are agreed that the golden years of '28 and '29 are denied us. We resent the idea that to get them back we must, with sweat and sacrifice, bring them back."

Well, after attending this meeting we feel that the electrical industry has adopted the advice given by Dr. Thorpe. It is a young industry that grew through mental and physical exercise and has not been spoiled by a few years of prosperity. And best of all, the leaders have not lost their sense of humor. There is no stampede, no stunts are being tried, just sound thinking, planning and working.

* * * *

IF YOU and your readers have read this far, then this all-night hammering on the typewriter has not gone for naught, but before closing so that you can look at the pictures, I would like to "steal" a paragraph from *Electrical World* to sum up the convention.

"Facts were faced, problems were stated and counsel was taken, but the keynote of the meeting was found in the courageous and hopeful attitude taken by industry leaders. There will be no going back. There was no defeatism—no counsel of deflation. Based upon the inspiring message of the convention speakers, the electrical industry gained impetus and courage from this milepost meeting in Atlantic City to build its future on a par with its past."

Now, George, I hope you folks out West had as fine a meeting for the P.C.E.A. as we had here in the East. And I hope too that your readers will get inspiration from the few points we have been able to gather for them.

—EDGAR KOBAK

CYRIL WHITE
. . . . recommended Tork clocks for all delegates

ARTHUR PRAGER (upper right) AND HIS NEW MEXICO DELEGATION
All East lauded the West through "The First American" . . . and uncrossed its fingers

ELY HUTCHINSON
. . . POWER in expatriates' mind, his walk, his talk

P.C.E.A. Convention Theme —

Public Service Is A *Human* Business

ADDISON B. DAY

President and general manager of the Los Angeles Gas and Electric Corporation, who was elected president of the Pacific Coast Electric Association for the coming year

DEAR ED:

Viewing the fifteenth annual convention of the Pacific Coast Electrical Association in the cold grey light of the morning after, it seems to us that the theme centered around the human aspects and human values involved in the business of supplying the public with electric light, heat and power. From the opening remarks of President A. M. Frost clear down through the closing features of the convention the fact was emphasized that the light and power business has been and is being judged by the sum of the individual impressions made upon public and customers by each and every employee from president to complaint clerk, meter reader and groundman. With the right kind of executive leadership, we may expect the rank and file to interpret the business in a manner that will discredit unjust attacks and safeguard against political raids.

The convention this year was held at Del Monte and if there is a better place in northern California for it, then it is a deep secret. Facilities for business or entertainment are superb. The way the hotel grounds responded to the spectacular lighting effects was breathtaking. The lighting experts made the emotions react to the rising and falling intensities of color on the trees and shrubs in just the way a misician does with a violin. You would certainly have enjoyed this.

If there is a depression on, or if the past has been a little off normal, there was no indication of it from any of the four hundred odd who attended the convention. The display of courage and faith in the future was impressive and inspiring. Hard work, confidence, team work and aggressiveness were not recommended as antidotes for the present; they were assumed to be an integral part of the programs and policies outlined.

With typical Western bravado and pride we tell you once more that we still feel that we put on conventions out here that are unusual and unique in the manner of presenting the various features. Formal addresses are held to a minimum. The skit, playlet, talking motion picture, and this year even the radio, were employed to make the messages of speakers, sections and committees both visable and audible. This year's convention set a new high standard in what we term the "Hollywood manner" of presentation. Perhaps the N.E.L.A. can learn something from the success we have enjoyed in making our programs entertaining as well as educational and instructive.

As for picking out of the program itself those features worthy of special mention, that is a task made difficult because everything was interesting and valuable. W. C. Mullendore gave the address that caused so much comment at Atlantic City. Here, as there, his talk was one of the convention high spots. President-elect Owens, with a straight-from-the-shoulder message brought the widely discussed trade relations problem right out into the open with some sensible recommendations. President Frost in his address sounded a keynote of informality that distinguished the convention throughout. Leon O. Whitsell of the California Railroad Commission, whom you know, presented a plea for informal conference in place of costly legal contests in rate making. His was a message that was particularly appropriate and one that merits national publicity. Bill Cyr of our own staff deserves the credit he received for interpreting some of the human phases of the power business in the form of a highly dramatic series of radio presentations. Bill answered your query as to "What is the power trust?" with this: "Power trust? Yes, trustees of a reliable public service free from politics; trustees of the conservation of your natural resources, trusted to put them to the highest beneficial use for you; entrusted with the responsibility of bringing you a sure supply of electricity for light to extend your day and beautify the night, power to lift the burdens from the backs of men and women, energy for the music and entertainment that comes to you through the air. When you think of us as a power trust we hope that it will be in the sense that we are deserving of public trust."

Space here will not permit a more detailed outline of the individual features of the program. If you or any of our readers want a thorough review and appraisal of the convention, the editors present it in the pages which follow. We hope that in these pages we have interpreted the good work, findings, information and inspiration of this, one of the "high" conventions of the P.C.E.A.

—GEORGE TENNEY.

President Frost Says Better Human Relationships Are Needed

HUMANNESS within and without the industry—in the relations of power company officials to employees within, and in the relation of power company empoyees to customers without—is one of those pertinent needs of which the utilities of the nation should take more cognizance. This thought was given paramount place in the address of President A. M. Frost, of the Pacific Gas and Electric Co., on Wednesday morning.

In developing this phase of his talk, Mr. Frost pointed out that while remote control is a proved engineering success, the human individual does not respond to remote and impersonal control as does the vacuum tube, so important a part of remote control apparatus. He went on:

"As the size of our power companies increases, it is increasingly difficult for headquarters to maintain the personal contacts with our far-flung representatives that is desirable for efficient and understanding administration of policies. In remote parts of our systems we have representatives who are looked upon by our customers in their locations as our company. It is frequently regrettable that these representatives are left alone during long intervals and fail to receive the personal contacts, inspiration, word of encouragement and direction from executive heads that they so greatly need.

"It is well recognized that it is an impossible task for the general manager of a large utility to contact intimately all employees. However, the selection by him of division and district representatives, who are chosen on account of their human characteristics and friendly understanding of the members of their organization, is probably of more importance than their ability as engineers, hard-headed business men, or collectors of delinquent accounts. Too many minor executives are given to closeting themselves within the confines of their own offices and holding aloof from their organizations in the mistaken idea that in order to maintain discipline they must appear hard-boiled and be hard to see.

"People need to be led. The type of employee that the electrical industry has and that the industry may well be proud of, is the man that will follow considerate, intelligent leadership; and response to this treatment is always immedi te . . . . High-grade employees, in every sense that you and I recognize as attached to the words "high grade," are what we need. Legitimate operating expenses should provide sufficient compensation to secure and hold their services.

"One of my good friends who is not associated with an electric light and power company has made a name for himself as an executive. He can count as friends almost every employee in his large organization, and he credits his success to the observance of three cardinal principles. To instill morale, courage, respect and confidence into any organization, he believes that the executive should be tolerant, fair, and, above all, human. I sincerely commend his philosophy to some of our own utility executives."

Commenting on the relations of utility employees to the customers, a relation which he characterized as "one weakness in our business methods," Mr. Frost declared:

"Our engineers zealously study and build so that our service may be more reliable. We are constantly on the lookout for means of improving our

Proudly A. M. Frost, president of the P.C.E.A., introduced his daughter, Miss Lucille Frost, to his world of friends and to her first convention

public relations. Our sales organization overlooks no opportunity for building load. But how about our customers? Our tendency is to get them and then forget them. We should remember that our service obligation does not end when a customer signs a contract, installs appliances or equipment to use our service, and we connect our lines to his property. Our obligation is not completed until we are sure that the customer is making the most efficient use of our service at rates that are designed for his particular application. We are not making friends or building good public relations when we permit a farmer to use a 50-hp. motor on his pump when a 25-hp. machine would do the job more efficiently and more economically. Our reputation is impaired when we permit an industrial power user to remain on one rate when at a slight additional cost he might add to his equipment and earn a better rate.

"There are hundreds of thousands of our customers whose only contact with us is through the monthly bills we render. What do they think of us and our service? We assume that they are satisfied because they do not complain. It is part of our obligation to find out what they think. When we do, our public relations will be immeasurably improved and our load-building plans speeded.

"Our customers will respond very much more quickly to the prompt replacement of a blown-out fuse or considerate treatment at the counters in our offices, than they will to luncheon club speakers or written messages from the heads of our utilities, telling them what a wonderful job we are doing and what numbskulls and buccaneers some of our political opponents may be."

He went on further to praise the work of industrial power sales engineers who are studying means of improving load factors, power factors, and general operating characteristics, so that industrial customers may find electric service the means to further economy of operation and greater profit. Further, he went on to show that electricity has been a real aid in industry; that agricultural obligations have been met as never before; and that throughout the field of business the electrical industry has forged ahead to greater progress and better relationships in the past year of alarming times.

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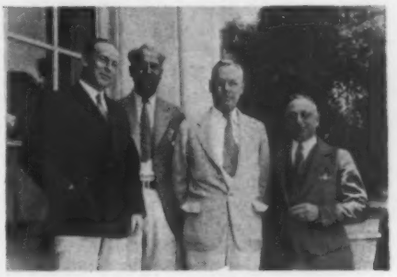
America's Salvation Is Planned Industry

Stating that the world is perilously close to being dominated by the machine, Chester H. Rowell, in addressing the convention on the subject of "Learning to Live With the Machine," pointed out that the present economic conditions have stressed the importance of the relation between humanity and machinery. Machines should be enslaved for the benefit of humanity and, although our present civilization is built up on this very premise, Mr. Rowell questioned if we have not reached the point where the mechanization of industry has placed mankind on the defensive in the disposal of overproduction in goods and labor liberated by machine power.

In ancient times, he said, leisure was the prerogative of those who had slaves to perform the routine tasks, leisure which was devoted to cultural subjects



Conventional aggregation this, with Earl Fisher, leading vice-president of the P.C.E.A., K. E. Van Kuran, who generaled the 1924 convention at Coronado, W. L. Frost, who was president at the Pasadena convention of 1928, and Dave Harris, who just attends them all

and to endeavoring to evolve a philosophy of enjoying life to the fullest extent. As improved mechanical arts gradually enabled the substitution of the machine for slave power, the movement toward the use of machines was hailed by students of political economy as a far-reaching development tending to release the individual from the bondage of labor and allow a more rapid absorption of culture. Actually this did not happen but the development of machinery did make it possible to supply more and more of the creature comforts to a larger and larger portion of the population.

While in theory continued application of machine power eventually should result in the complete liberation of mankind for more pleasurable pursuits, in reality the reverse is true. Machines moved the scene of labor from the shop

Speakers both, one inside the industry, the other outside, are James T. Donohue, winner of the Pacific Coast speaking contest, and Chester H. Rowell, noted publicist and internationalist

to the factory and profits resulting from increased productivity of each worker were plowed back into the organization to build branch factories which in turn would produce still larger amounts of goods whose profits duplicated this process. Huge organizations, built up as a result of this system to supply the world with its necessities and luxuries, expended tireless efforts to devise more efficient machines which would give greater production with less labor. Labor thus released was utilized to supply the increasing and newly created wants of the people and as long as there was an infinitely expanding market to absorb the goods, this practice was legitimate. Until recently the world was considered such a market, but recent economic developments indicate that our machines and their productive capacity may be in excess of world demand.

If this be true, Mr. Rowell declared, we then are confronted with the problem of regulating machinery to supply our needs adequately but without destructive over-production. If this means the literal reduction of working time by the individual and not the diversion of displaced labor into other productive efforts, what then will be the fields of activity to which man will turn to employ his leisure time? In short, the world today is confronted with the problem of planned production under a system providing a distribution of wages and labor so that a worker will be paid in accordance with what he produces and not according to the time he works. Furthermore, leisure will have to be guided into some cultural or self-advancing direction.

Russia has endeavored to solve this problem of planned production by means of a military dictatorship, and in the case of one or two commodities, has succeeded in seriously affecting world markets. Can the capitalistic system of individual initiative meet this challenge and so regulate its machinery of production and distribution to the indicated requirements of the world? The electrical industry he cited as the best example of an American business organization which has utilized the proper planning in producing its commodity to the economic advantage of the community. Other lines of business, intimated Mr. Rowell, will have to follow in its path even though the price of planning may be government regulation and restriction of individuality in expansion. Business will be called upon to solve not only the problem of production and distribution, but also the social problem that will immediately follow any attempt to restrict either machine production or labor, the problem which may find its solution in diverting machines to assist us all in learning more about the art of living.

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Adequate Home Wiring a $20,000,000 Market According to W. L. Frost

ADVOCATING united industry support of an adequate wiring program, one which would increase the now small percentage of adequately wired homes in California, W. L. Frost, vice-president in charge of sales, Southern California Edison Co. Ltd., presented the annual report of the Pacific Coast Electrical Bureau at the Wednesday morning session. Speaking as chairman of the board of directors of the Bureau, he cited the need for cooperation, saying: "Progress in any great movement is measured not only by individual energy but also through collective cooperative effort. This is particularly true of the electrical industry . . . . The necessity for cooperation within the industry is probably more important today than in any other organized industry, particularly in view of the tendency of political malcontents to seek a solid foundation upon which to erect a flimsy platform with the support of an appeal to mass prejudice."

Criticizing the industry's efforts in the field of adequate house wiring, Mr. Frost mentioned that, while California is probably above the average, only one per cent of the builder's dollar is spent for electrical wiring, and one per cent for electrical fixtures, according to recent figures. This, he believed, was far below the legitimate quota.

During the years 1929 and 1930, 44,800 homes were erected in eleven of the largest cities in the state. Of this number, less than 10 per cent were adequately wired. As compared with the inadequately wired homes, approximately $500 additional is expended in each instance for wiring and appliances. If the industry had been able to wire adequately the 44,800 homes, manufacturers, wholesalers and contractors would have benefited during the last two years by an increased retail volume of business aggregating $20,000,000. Further, surveys indicate an increased revenue value to the power companies of approximately $96 per annum from properly wired homes.

Again taking the figure of approximately 45,000 homes, the apparent annual loss in gross revenue to the power companies of California is $3,840,000. This revenue has not been lost for one year, but for many years. Mr. Frost pointed out that through the sales activities of merchandisers of electrical appliances, circuits in the homes today are being overloaded be-

From South and East came Max Pooler, of the Tucson (Ariz.) company, and Ernest Greenwood, who commercially directs the N.E.L.A.

cause of their initial inadequacy of wiring. This results in a dissatisfied customer, hindering the progress of electrical development in the home.

Likening the Pacific Coast Electrical Assn. to the research laboratory and workshop of the industry, and the Bureau to the promotional sales staff, Mr. Frost dedicated the Bureau to a primary principle—"the duty the industry owes to the public."

Toward two primary objectives, he concluded, the activities of the Bureau are directed: (1) an internal harmony in the industry without which the benefit of industrial or collective efforts cannot be reached, and (2) the promotion of clearly defined, carefully laid plans to create new business opportunities for the industry.

Day Elected President With Fisher and Mullendore as Vice-presidents

ADDISON B. DAY, president of the Los Angeles Gas and Electric Corp., was elected president of the Pacific Coast Electrical Association for the 1931-32 year at the Wednesday morning general session. R. E. Fisher, vice-president in charge of public relations and sales, Pacific Gas and Electric Co., was named first vice-president, and W. C. Mullendore, vice-president of the Southern California Edison Co. Ltd., was selected as the second vice-president. N. R. Sutherland, Pacific Gas and Electric Co., was again re-elected as treasurer for the forthcoming year.

Named also at the Wednesday morning session was the executive committee of the association, consisting of A. M. Frost, Pacific Gas and Electric Co., San Francisco; W. R. Marshall, Westinghouse Electric & Mfg. Co., San Francisco; A. E. Hitchner, Westinghouse Electric & Mfg. Co., Los Angeles; E. B. Criddle, The Southern Sierras Power Co., Riverside; George C. Tenney, McGraw-Hill Co., of California, San Francisco; H. L. Masser, Los Angeles Gas and Electric Corp., Los Angeles; S. E. Gates, General Electric Co., Los Angeles; D. E. Harris, General Electric Supply Corp., San Francisco; A. F. Morairty, Central Arizona Light & Power Co., Phoenix, Ariz.; G. E. Arbogast, president, California Electragists, Southern Chapter, Los Angeles; A. E. Holloway, San Diego Consolidated Gas & Electric Co., San Diego; and W. L. Frost, Southern California Edison Co., Ltd., Los Angeles.

This newly elected guiding committee, with the officers, who are also members, held a meeting before the convention adjourned and outlined a program for the coming association year.

Chairmen of the several sections were named by President Day before the convention adjourned. They include: Accounting Section, A. B. Carpenter, San Joaquin Light & Power Corp.; Advertising Publicity Section, E. P. Ramsey, Los Angeles Gas and Electric Corp.; Commercial Section, Frank Weiss, Los Angeles Gas and Electric Corp.; Engineering Section, H. H. Buell, Pacific Gas and Electric Co.; Public Relations Section, A. M. Frost, Pacific Gas and Electric Co.; Purchasing and Stores Section, A. A. Charonnat, Pacific Gas and Electric Co.; Transpartation Section, E. C. Wood, Pacific Gas and Electric Co.

L. A. Reynolds, Pacific Gas and Electric Co., was named chairman of the Insurance Committee; W. C. Mullendore, Southern California Edison Co. Ltd., will head the Public Policy Committee as chairman.

Full personnel of the various sections and committees will be published at a later date.

Generalissimo of convention details, Harry Thomas, program manager extraordinary, and K. I. Dazey, managing director of the P.C.E.A., who also ran around

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Transportation Problems Analyzed and Studied

Led by its chairman, E. C. Wood of the Pacific Gas and Electric Co., the Transportation Section reviewed the accomplishments of the past year and laid the cornerstone for future activity in its parallel session Wednesday afternoon. Maintenance of motor equipment was discussed at length to the end of reducing charges for this item. The cooperation and coordination of ideas of the various transportation superintendents have led to such successful results in the past that the consideration of this subject will be carried on through the coming year. The trend toward the use of motor vehicles for mounting labor-saving devices makes it imperative to keep adequate check on their operation and increase the importance of proper maintenance.

Due to the use of propelling motors for driving truck-mounted devices, such as winches and compressors, the methods of providing a correct system of accounting which would provide a higher rate for such vehicles was discussed and future action in this direction was indicated for next year's consideration.

Coordination of ideas regarding garage layout to the end of securing a more standardized building incorporating proved advantages was discussed, the section report as it appeared in the May 15, 1931, issue of ELECTRICAL WEST being used as a basis.

Many of the larger companies which have experimented in the use of "pool" cars, have adopted this system as standard for their personal transportation. While maintenance was noticeably higher under this system, this disadvantage was more than offset by the increased load-factor of automobiles operated.

To this same end, experiments conducted in pooling the trucking facilities of the various departments into a transportation division under a "truck dispatcher" have proved sound, economic ventures and are now being used as standard operating practice. A recording device which records the running and idle time of the truck assists in allocating costs and in increasing the truck load-factor. Outside drayage expense has been eliminated or reduced to a nominal figure under this system. Body materials and fuels will also be the subjects destined for further study by the section.

San Diegans, L. M. Klauber, former P.C.E.A. president and snake expert, and Bill de Waard, chairman of the Purchasing and Stores Section, movie producer for the convention

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Economic Stress Demands Better Accounting

"That accurate and efficient accounting methods are even more important during time of economic stress" was the thought indelibly impressed on the minds of the Accounting Section members at the Wednesday afternoon parallel session. A. B. Carpenter, San Joaquin Light & Power Corp., section chairman, after a brief resume of the activities and aims of the group during the year, turned the meeting over successively to the various committee chairmen. E. E. Dodge, construction accounting committee chairman; D. C. Griffin, general records committee chairman; and F. C. McLauglin, fixed capital records committee head, briefly reviewed the reports previously printed on pages 279-291, ELECTRICAL WEST, May 15, 1931.

F. Lovejoy, chairman of the customers' billing and records committee, read his groups' report, which included a lengthy study of two bookkeeping systems and a word on customers' deposits. Of the first, the report outlined carefully the advantages and savings of the Burroughs multiple register billing machine system and the Hollarith tabulating machine system as regards meter books, meter readings, billing and addressograph, district operations, cash reports, bookkeeping, closing accounts, sales audit sheets, consumers' indexes, and analysis of sales.

W. C. F. West followed with a report of the statistics committee, of which he is chairman. "Statistics," he said, "are the pictures of business," and he went on to tell of the new importance of statistics gained because of the depression, and of the need for accuracy in business analyses and predictions which has been emphasized by the present necessity of knowing how and where every dollar should be spent. The functions of statistics he

named as: (1) to collect and record data required in management, (2) to analyze these figures, (3) to aid in their interpretation, and (4) to present them in proper form to the proper individuals.

Standard accounting procedure where the utility operates the merchandise department as a distinct unit entirely apart from the new business department, where the two departments are combined, where the utility can concentrate its merchandise accounting in a central location, and where the territory is so scattered that accounting must be done through branch offices, was recommended by R. B. F. Chisholm, chairman, merchandise sales accounting committee. These were the problems which seemed most vital at the moment, he believed, and recommendations for their solution were made a part of the report which he read. A discussion of the various forms used in merchandise accounting and typical methods of using them as exemplified by systems of the Coast Counties Gas & Electric Co., Pacific Gas and Electric Co., and Southern California Edison Co. Ltd., constituted the body of the report.

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Richardson Named Stores Section Chairman

Three major problems were presented to the Purchasing and Stores Section for discussion at the Wednesday afternoon parallel session after they had been introduced by William de Waard, San Diego Consolidated Gas & Electric Co., section chairman.

Consideration was first given to the practicability from an accounting and storekeeping viewpoint of issuing inexpensive items from stock, charging them to a clearing account, and prorating the expense to various operating and construction accounts on a labor basis. This problem was followed by discussion of the practice of charging out such items as iron and pipe fittings on a weight basis instead of describing each according to size, type and shape, as is now done. A. A. Charonnat, Pacific Gas and Electric Co., conducted this discussion session.

The matter of charging out pole line hardware on a pound basis was also presented.

Following this business, a motion picture, "Material Reclamation and Salvage," was shown. It presented the latest methods of salvaging lead covered cable, scrap copper, fittings, second-hand poles and crossarms, transformer oil, and miscellaneous material returned to storerooms by operating and construction forces.

Activities of the section for the ensuing year were outlined in a business session which preceded an executive committee meeting and the election of officers.

G. M. Richardson, purchase engineer for the Southern California Edison Co. Ltd., was named chairman to succeed Mr. de Waard, retiring section head. E. O. Mahoney, Pacific Gas and Electric Co., was elected vice-chairman to succeed Mr. Richardson.

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Commercial Problems Are Reviewed By Stahl

Study of methods of improving employee cooperation in sales programs, the preparation of a manual incorporating plans and specifications for an all-electric home which will stress the desirability of built-in electrical appliances, the investigation of commercial possibilities of air conditioning and further study of gas, diesel and steam engine competition were projects recommended for Commercial Section activity for the coming year by retiring Chairman A. G. Stahl at the meeting of that section Wednesday afternoon.

Broadshouldered power company champion, Bill Mullendore, with A. E. Hitchner, Los Angeles Westinghouse golfer, and "Bud" Rice, Edison merchandiser de luxe

Chairman Stahl reviewed the work of the section during the past year, pointing particularly to the development of new or revised sales manuals covering such subjects as electric air heating, water heating, industrial electrification, industrial heating and the application of electric power to agriculture. Copies of these manuals may be secured from the headquarters of the association, he stated.

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Refrigeration Campaign Meets With Success

Reporting that 375,000 domestic electric refrigerators have been sold during the first five months of 1931 in the face of unsettled economic conditions, C. E. Greenwood, commercial director, National Electric Light Assn., predicted in his review of the national refrigerator activity before the Commercial Section Wednesday afternoon, that the quota of 1,000,000 refrigerators established for the year will be met.

Golf and business—at least H. J. Billica, who pinch hit for Al Nicoll as the chairman of golf, and N. R. Sutherland, treasurer of the association, who reported on "where it comes from, where it goes, and what's left, if any"

The present successful national refrigeration merchandising is attributable to the three years of cooperative sales promotional activity which involved selling all-year refrigeration and impressing upon the public the "50 deg. for safety" slogan, in his opinion. The electrical industry is cashing in upon this educational effort at the present time, he said.

Electrical refrigeration bureaus have been established in 407 cities and the effects of the national program are being felt in 8,600 communities. Mr. Greenwood reviewed the activities of the various bureaus and highly complimented the electrical industry of the Pacific Coast upon the manner in which the program is being followed in this territory. Over 100 refrigeration shows have been held within the past 90 days and 300 more are in prospect for the early fall. A complete report covering the conduct of shows of this character is available through the N.E.L.A. headquarters, he announced.

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Appliance Modernization Needed Says Rice

Why an electric clock should look like a grandfather clock, when all the mechanism which the latter in bygone days housed in its elongated frame, in the case of an electric clock is located miles away in a power house, was one of the questions asked by H. C. Rice, Southern California Edison Co. Ltd., in a singular talk before the Commercial Section at the Wednesday afternoon parallel session, in which he lampooned the modernizing attempts of electrical appliance manufacturers. "Beyond the Alps Lies Italy," was the title of the address. The parallel was drawn that even as success for Napoleon lay just over the mountains, so might success for the electrical merchandising industry lie just beyond the horizon of new development.

Removing the electrical contraptions from a "modern" electric range, Mr. Rice found that it was nothing but "grandmother's old wood stove." The same routine was followed for the washer, and this was found to be nothing but the old family washtub. No change in design of any appliance has been radical enough actually to depict true electrical advancement, he believes, although one manufacturer departed from accepted ice box design in making an electric refrigerator and has encountered unusual success because of this departure.

Architects, he went on further to say, would be glad to incorporate the new electrical appliances, both large and small, into any house they design, were

these appliances distinctive enough to lend individuality to that design. Women, in particular, respond to art and originality; the appliance manufacturers should be setting their designs to catch the female eye.

Illustrations for Mr. Rice's contrasts between modern appliances and their ancestors were ingeniously provided by means of cards on which were shown latest type electrical appliances. By removing masks from certain parts of these pictures the ancestor from which today's appliance was derived could be quickly recognized.

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Utilization Laboratory Needed for Research

Recommending that a laboratory devoted to the utilization of electricity in all phases of industry—a laboratory comparable to those research organizations now established and conducting investigations on problems connected with the distribution, generation and transmission of power—be established and supported by the electrical industry as a whole, George C. Tenney, editor, ELECTRICAL WEST, plunged into a series of prognostications concerning "The Future Uses of Electric Power in Industry" in a talk before the Commercial Section on Wednesday afternoon.

"We now have organizations," he pointed out, "whose efforts are devoted to sales promotion of electricity, but not a single agency exists whose primary purpose it is to study and develop new uses for the product which the industry sells—electricity. Such research in the past has been left in the hands of the manufacturers or that specific industry in which electricity is to be put to work."

A definite part of any industry marketing program should be such a laboratory seeking new, practicable and economically feasible uses to which power might be put, Mr. Tenney declared.

His prognostications were based on the progress of electricity from its inception in 1882 until the present; he reviewed the many applications made during this 50 years.

As problems which would confront the utilization-laboratory, he cited many possible future uses, explaining that "many of these applications have been surface-scratched, but there remains a tremendous amount of research, experimentation and selling before they can be called truthfully 'applications of electricity.'" Among these problems he mentioned: homes, which will be fabricated largely from steel, electrically welded; electrodeposition of non-metals; greater application of electric heat to industry—particularly the petroleum industry, in which the fineness of temperature control permissible with electricity promises, with hydrogenation, revolutions in methods and discovery of products hitherto unknown; electronics, particularly in possible future applications of the Thyratron tube.

Windowless factories in which weather, illumination, air conditions, and even sunlight will be supplied by electricity (the Simmons Saw experiment was mentioned); rural electrification, as in soil heating to enforce growth; present mobile farm-power applications, as in plowing, harvesting, harrowing, and mowing; water supply of arid Western states, a large potential field in the reclamation and purification of sewage in major metropolitan areas involving the use of large quantities of electric power for pumping and other purposes, were also cited.

On this latter matter Mr. Tenney suggested that "somewhere in the realms of electro-chemistry lies the solution to the water supply problem." Further, he submitted what he thought a possible solution, a process he termed "electro-filtration." In this process, which involves the purification of salt water from the oceans, the water would be pumped into a series of electro-chemical cells. Through the action of the cells on the water would come, from one outlet, fresh, pure water agreeable to taste, and from another outlet would come the residue chemicals, salts, which would help put this system on an economically feasible basis.

Wheelhorses of a horseless age: Clyde Baugh, chief property man for the show convention, and Eddie Wood, chairman of the Transportation Section and in charge of everything on wheels

Successful Merchandising Requires Man Power

Successful domestic load-building involves the development of a fair but forceful policy, the setting up of a specific plan with definite quotas and the recruiting of adequate man power to make the plan work, according to Glenn L. Jackson, general sales manager, California Oregon Power Co., who addressed the Commercial Section Wednesday afternoon on the subject, "1,800 Kw.-hr. Per Residential Consumer."

Describing the merchandising activities of the California Oregon Power Co. and the Mountain States Power Co., Mr. Jackson pointed out that these companies serve 40,000 consumers in seven Western states under widely varying conditions. For instance, experiments during the past year have definitely proved that his sales organization can sell electric ranges in Wyoming in the face of 29-cent natural gas competition.

Electric range saturation in many of the communities served by the company exceeds 30 per cent, he stated, which represents the cream of the prospects for this service. In order to sell electric cookery to the next large group of prospects, comprised of wage earners and those who live in rented homes, his company devised a portable range wiring installation which could be sold to the consumer for $35 and which could be moved from one residence to another for the nominal charge of $7.50. This plan, he pointed out, did not solve the problem of sales resistance connected with the cost of range wiring. Recently the companies have arranged with the utility regulatory bodies in California and Oregon to permit capitalization of the cost of this range wiring installation. As a result many ranges formerly out of service because no wiring existed in the homes have been returned to the lines.

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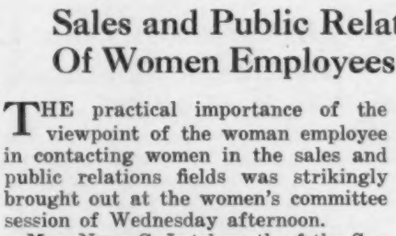
Sales and Public Relations Viewpoints Of Women Employees Recognized

THE practical importance of the viewpoint of the woman employee in contacting women in the sales and public relations fields was strikingly brought out at the women's committee session of Wednesday afternoon.

Mrs. Nyra G. Letchworth of the San Joaquin Light & Power Corp., as chairman of the women's committee opened the meeting with a word of appreciation for the work of the individual chairmen and then read a greeting from Miss Miriam Jackson of the Hawaiian Electric Co., who was unable to be present.



Bay region smiles from Lou Galbraith of Oakland, Jack Ross of San Jose, and Vic Hartley of the Bureau

In discussing the importance of women's committee work, Miss Marvel Murray of the Los Angeles Gas and Electric Corp., outlined the positions now being held by women in the utility field in practically every department, from engineering to finance, and recounted numerous instances of contacts between women employees and the public by which public relations were improved.

"Women in public utility work, if properly trained," said Miss Murray, "are able intelligently to discuss electricity with their neighbors and friends, from the generation of power to its utilization through the ap-

pliances in the home. They are able to explain the domestic rate to consumers. They tell the women they contact of their company's aim for the very best service at the lowest possible cost. They know why some appliances are good and why others are not and can explain this to their friends and to the customers of the electric utility. They are enthusiastic domestic load builders. They buy appliances for use in their homes; they give them as gifts to their friends and relatives and they demonstrate and recommend them to their neighbors. Every woman employee is a potential saleswoman and the training she receives through the women's committee helps to develop her into an actual saleswoman. Women are ambassadors of the industry to the women of the nation, not only during their tenure of employment, but long after all business connections with the industry have been severed."

Three utility companies of Arizona possess active home service departments, as reported by Miss Wilma Jones, home service director of the Arizona Edison Co., Phoenix. All of these conduct successful cooking schools and give regular appliance demonstrations and lectures. Home lighting programs, which also include daily classes in lamp shade making, have proved most popular. The power company home service auditoriums are available throughout the year for women's club meetings or for entertainments of various kinds, with the home service director serving as hostess and assisting with dinner or refreshments prepared in the completely electrified demonstration kitchen. Programs of household suggestions and recipes are broadcast twice weekly over the radio and have resulted in many actual sales of appliances, as well as in much customer good will.

Two of the important functions of the home service departments of the Arizona utilities have been the testing of appliances which the customers report are not working properly and the follow-up of all complaints on high bills.

That women are the purchasers of 80 per cent of all electrical appliances used in the home was emphasized by Miss May E. Layton of the Valley Electrical Supply Co., Fresno, chairman of the subcommittee on home service.

"We cannot always depend upon new consumers for increase in business volume," said Miss Layton, "and an alert, informed service worker has the best opportunity in the world of developing business from existing satisfied consumers. She usually meets women in their own homes where they feel free to talk of any or all of their electrical appliances. . . .Before long she has a complete inventory of all the electrical appliances in that home along with a mental note of what is desired and about how soon it might be opportune for a salesman to call."

Miss Layton pointed out the need for a varied training for home service workers, enabling them to answer questions on home decorating, menu planning, nutrition and the bringing up of children, as well as the use and care of electrical equipment.

Reports were made on the home service work of the various utility companies. Among them the following items of special interest were mentioned:

The Valley Electrical Supply Co. (merchandising department of the San Joaquin Light & Power Corp.) sends out letters with return postcards to all purchasers of electric ranges, advising the customer of the home service department and enclosing a few helps and suggestions. This brings out any immediate requests for assistance and enables the planning of home service calls so that urgent matters are attended to promptly. Of 862 letters mailed last year, 267 cards were returned and second personal letters were written or calls were made.

This company also offers the use of an auditorium and facilities for newspaper cooking schools, demonstrates at county fairs, provides programs for clubs, and works in conjunction with the domestic science instructors in the schools. When a new type of appliance is contemplated for introduction by the sales department it is turned over to the home service department for experimentation and is not stocked until the report on it has been received.

The home service work of the Southern California Edison Co. is under the commercial department and not under the women's committee, but home service programs are conducted at all women's committee meetings for the interest and education of employees in this field. Similar programs have been held by the women's committee of the Coast Counties Gas & Electric Co.

In addition to work in the home and the conducting of both large and small cooking schools, the Pacific Gas and Electric Co. holds group meetings of the manager

Master Showman and general convention chairman, Al. C. Joy, and leader of the "women's auxiliary," Mrs. Nyra Letchworth

and tenants in apartment houses in which ranges have been sold, virtually conducting a cooking school for the benefit of a single building. These are repeated as a change in tenants makes it necessary. Programs are furnished for women's clubs and work is carried on as well with domestic science instructors of the public schools. Educational programs are given for the benefit of employees. In San Francisco special work has been done with architects and builders, demonstrations in the form of electrically cooked meals proving most effective in getting over the idea of the benefits of electric cookery.

Miss Bertha J. Dale of the Pacific Gas and Electric Co. reported briefly on the work of the newly organized women's committee in that company. She urged the importance of outside contacts and recommended the encouragement of membership in business and professional women's organizations and in other women's clubs and the furnishing of programs which put over the utility's story.

Women as well as men were urged to study the public ownership angle of public relations work by Mrs. Jeanette I. Rees of the Southern California Edison Co. in a paper which was read by Miss Clotilde Grunsky in her absence. She gave an account of the course of study which the girls of the Edison company have been carrying on under Dr. George L. Hoxie, research engineer and economist.

Women should talk shop when they get together, according to Miss Grunsky, Pacific Coast editor of *Electrical Merchandising*, who gave a brief inspirational talk on the opportunities open to women in the electrical field.

The importance of proper lighting in the American home was discussed by Miss Ose C. Koch of the Coast Counties Gas & Electric Co., who urged a further understanding of this vital subject on the part of women employees of utility companies, whatever their positions may be.

In conclusions, Mrs. Marge M. Edwards of the San Diego Consolidated Gas & Electric Co. gave a brief report of the activities of the local women's committee for Miss McKoane, its chairman, which she followed by a report of the subcommittee on safety.

Several of the member companies still maintain First Aid teams, but the emphasis at the present time is upon safety programs and work with the community. One of the women's committees has written a series of safety plays which have been presented before outside women's clubs with excellent effect in the furtherance of public relations. Safety bulletins and clever posters have been used effectively by several companies.

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Oil Circuit Breaker Development Features Engineering Program

ALTHOUGH highly technical in nature, the Wednesday afternoon session of the Engineering Section proved enlightening in its thoroughness. The major part of the work centered on oil circut breaker development, but a discussion of Einstein's work added variety.

R. H. Halpenny, The Southern Sierras Power Co., section chairman, briefly reviewed the report published in the May 15, 1931, issue of ELECTRICAL WEST, and then introduced E. B. Merriam, commercial engineer, General Electric Co., Philadelphia.

In his paper, "Recent Developments in Oil Circuit Breakers," Mr. Merriam discussed at length the recent "oil-blast" theory of arc extinction, prefacing his remarks with a word on the early design characteristics of circuit interrupting devices and leading up to present requirements of oil circuit breakers. By a series of slides made from motion pictures taken at rates of 50 to 120 exposures per second inside of an oil cirucuit breaker tank, he enabled the audience to visualize what happens when a high voltage circuit is broken under load. In theory, the arc drawn by the moving contacts when the circuit is interrupted disassociates the surrounding oil into ionized gas which, being a conductor, tends to maintain the arc. If, during the instant when the current passes through zero, this ionization can be decreased sufficiently to prevent reoccurrence of the arc due to voltage stress between the contacts, the arc will remain permanently broken and the circuit successfully interrupted.

Modern systems, with their heavy current flow and high voltages, require that faulty circuits be interrupted within a few cycles if system stability is to be maintained.

The contacts of the oil-blast explosion chamber consist of an upper, an intermediate, and a lower element. In the closed position, these three elements are pressed together.

When the breaker is tripped, the intermediate and lower elements move downward. An arc is drawn between the upper and the intermediate elements. This arc forms gas and places the oil in the explosion chamber under high pressure. There is little relief for this pressure until the intermediate element reaches its stop. At that point the lower element leaves the intermediate element, thus drawing a second arc and venting the established pressure through the hollow lower element.

Thus, solid oil is blasted across the second arc. This action forces gas and oil down through the lower element.

At zero current the arc products are swept away and a solid wall of oil is placed in the arc path. The oil has a normal dielectric of 200,000 volts per inch, and a short-period dielectric of 600,000 volts per inch. The possibility of reestablishment of the arc is thus precluded.

Mr. Merriam used a model of the breaker to demonstrate the principle involved and used slides to reproduce scenes and results from actual tests made on an oil-blast breaker on the lines of an Eastern utility company. Lively discussion followed the close of the talk.

Following this, Dr. E. T. Bell, California Institute of Technology, reviewed "Einstein and His Recent Work," relativity and quantam mechanics, from a physicist's viewpoint. He explained that the German scientist was endeavoring to evolve a formula expressing the relation between the two. This equation would enable the results of natural phenomena to be expressed in such a manner that they would be identical for any observer in any system of coordinates. Dr. Bell believes new physical theories are subject to almost immediate refutation in the light of subsequent developments; it will be some time before the result which Einstein is seeking is either secured or the search ended.

Oil circuit breaker design again became the center of attraction when A. W. Copley, engineering manager, Pacific Coast Division, Westinghouse Electric & Mfg. Co., explained the details of construction and operation of another method which has been devised to make circuit breaker operation more efficient. His paper was entitled "De-ion Circuit Breakers and De-ion Grids" and in it the principles of arc extinction, as determined by Dr. Joseph Slepian, Westinghouse research engineer, were explained. From studies on the properties of electric arcs, it was discovered that ionization, for a short distance from the negative electrode or cathode, disappeared almost instantaneously after the current for that cycle had passed through zero. This gave a short space which was free from ions and consequently had a very high dielectric strength, although, due to its short length, was capable of withstanding a few hundred volts. As the ordinary circuit breaker often has several thousand volts impressed between the electrodes, arc interruption is accomplished by placing several cathodes in series, each cathode having its own layer of high dielectric strength. Such a breaker is known as the De-ion circuit breaker, and in a talking motion picture Dr. Slepian discussed the construction and operation of such a device.

A series of cathode electrodes is formed by using circular copper plates each insulated from the other. Mag-

Big switchgear men of G.E. are Al. Fulton of San Francisco, E. B. Merriam of Philadelphia, who described them to the Engineering Section, and L. H. Cunningham of Los Angeles

netizing coils are placed at intervals in the series. Through electromagnetic action, the arc is drawn into this series of plates where the area of the plates provides a racetrack around which the arc, now broken into a number of smaller arcs, travels because of the magnetic action of the coils previously described. At the first period of zero current, after it has entered the de-ionizing section of the breaker, the arc is extinguished. A feature said to be a decided advantage for this method is the elimination of oil from the breaker, which may operate out in the air. As the cathode layer is limited to a dielectric strength of about 200 volts, the permissible stacking of the De-ion plates limits this breaker to voltages not exceeding 25 kv.

The De-ion principle as applied to higher voltages was taken up in a second talking picture, presented by Mr. Copley. This picture discussed the investigations of H. G. McDonald, circuit breaker engineer of the Westinghouse company, the results of the investigation leading to a slightly different application of the De-ion principle for breakers up to 220 kv. This utilizes a series of grids, the plan of which enables the arc drawn between the electrodes to be forced into a number of small chambers imprisoning a quantity of fresh oil. The heat of the arc evoporates the oil, and fresh oil vapor, in its effort to escape, passes into the arc itself and mixes turbulently with the ionized gas, the effect being to raise the dielectric strength of the gas and prevent re-occurrence of the arc after the current has passed through a zero point. In short, the arc is bombarded for its entire length with fresh oil vapor in its attempt to escape from the chambers in the grids. Successful operation under currents at high voltages have proved the theories upon which the design of these breakers was established and further contribution has been made to the science of arc performance and characteristics.

The Engineering Section will be under the leadership of H. H. Buell, Pacific Gas and Electric Co., for the coming year. Mr. Buell called a meeting of his committee chairmen during the convention to lay out plans for the work to be done.

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Cold Air Means Cold Cash Greenwood Declares

Where intensive commercial activity will head during the next few years and what potentialities lie in pressing refrigeration sales in homes, businesses, and industries were impressed on members of the electrical industry by N.E.L.A. Commercial Director C. E. Greenwood in his talk, "Cold Cash From Cold Air," on Thursday morning. Speaking of the Pacific Coast alone, he prophesied:

"The grand total of your potential business in domestic and commercial refrigeration and in air-conditioning in commerce and industry only—and it is not on a fanciful basis—points to an energy output of 543,000,000 kw.-hr., equal to about 8 per cent of the total energy output of California, Arizona, and Nevada, for all purposes during 1930. . . . There is cold cash for the utility in this cold air business."

Mr. Greenwood arrived at his total by setting a 30 per cent additional saturation in domestic refrigerators in the next five years, amounting to 376,000,000 kw.-hr. with a revenue of $11,000,000. To this he added a 20 per cent saturation in commercial refrigeration, amounting to 36,000,000 kw.-hr., and an air-conditioning load of 67,000,000 kw.-hr.

Especially enthusiastic was he about the future of air-conditioning, calling attention to the demands of the American people for comforts of all kinds. Even now, theaters, hotels, stores, and other business places are adding comfort by cooled-air, and the potentialities of this field offer one of the finest opportunities for commercial development by the utilities.

Statistics and figures of all sorts were used freely by Mr. Greenwood in proving his points.

Of the nation at large, he showed that 2,500,000 refrigerators were operating in households on June 1, yielding an annual gross of $68,000,000 on more than 1,500,000,000 kw.-hr., 13 per cent of the domestic output of 1930. Another 1,500,000,000 kw.-hr. have been sold to ice manufacturers, bringing the total of electrified cold storage space in the United States to 60 per cent with a yearly consumption of 310,000,000 kw.-hr.

Figures on commercial installations and those in business houses such as theaters and office buildings brings the total to a staggering sum of 4,250,000,000 kw.-hr., 6 per cent of the total energy sales. Optimism alone can result from a study of the figures, the N.E.L.A. executive believes, and for that reason he urged a wider study.

This showing in refrigeration he attributed to the program of education in matters of refrigeration as a result of intensive campaigns by manufacturers and central stations. As an indication that this pioneering work will be carried on, he mentioned the work of the Electric Refrigeration Bureau, its program, possibilities, and the part which local bureaus play in assuring a national success of the endeavor.

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Purchasing and Stores Men Tell Story in Movies

"Activities of the Purchasing and Stores Department," a motion picture filmed under the direction of W. de Waard, section chairman, and depicting methods of materials and supplies, constituted the report of the Purchasing and Stores Section at the Thursday morning general session.

Vast quantities of sundry commodities which are required daily by the construction and operating departments present a problem in stocking, storing, carrying and handling. The problem has been studied in past years by this section with the aim of standardizing on the most efficient procedure. The picture shows the culmination of that work and presents methods which have been accepted as the only way to handle material if efficiency is to be had.

Requisition routine, accounting procedure, and reordering methods were shown to have been reduced to simple, reliable systems, the direct result of which has been the reduction of costs of handling, stocking, and distributing. Showing that the use of machinery and the systematized arrangement of bins and receptacles have contributed to this end, the picture ended with a dramatization of the work of the section for the past year, during which member companies have, by using the methods described, handled $135,000,000 worth of equipment, materials and supplies with continually decreasing costs per unit.

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Electrical Industry Cannot Avoid Public Gaze

Likened to "the city on the hill" mentioned in the Bible, which all could see and which could not be hidden from view, the electrical industry, according to R. G. Kenyon, chairman of the Advertising-Publicity Section, in his talk at the Thursday morning general session, was in a position where it could not avoid the public gaze even if it wanted to. "In a way we are in a peculiar position," said Mr. Kenyon, "in that the public, in fact practically every member of society, cannot escape us. And, on the other hand, we cannot possibly escape them either."

Mr. Kenyon then pointed out that about 6 per cent of the population were the leaders and that 94 per cent were content to follow in the wake of their leaders. For the population of

The Advertising-Publicity Kenyons, Mrs. and "Spike." The latter constructed the umbrella with which to ward off political storms

the territory served by the Pacific Coast Electrical Association this 6 per cent or leader group represented a total of some 300,000 people. It was the job of the industry to tell these people the story of the utilities in order that they could convey it to those who followed them.

He then went into an analysis of the problem, using an ingenious chart. He drew two lines which crossed each other at right angles. In one sector he wrote the word "impulses," which he described as the impulses which lead up to decisions on the part of any human being. He split this sector in half with anothed line and differentiated between the natural impulses which were the result of more or less instinctive action and the motivated or formed impulses which were the result of training and mental influences throughout life.

In the adjoining sector he wrote the word "advertising," which he again split up into institutional and business getting or commercial. The third sector he labeled "publicity," which he again split into business publicity, such as financial, industrial, and business news, and the second division he called personality, which was the result of personal service to the public and was the result of the development of men and the capitalization of their personalities in respect to the public. The last sector of the diagram he labeled "word of mouth publicity," which again was split up. There was internal publicity, or the conversations and opinions of employees. The external publicity was that of employees in contact with their friends outside the industry and with the people with whom they do business. He made a strong point of the fact that as far as the public is concerned employees of the power companies are never off the payroll. They are asked questions regarding their company wherever they may be, whether at a social gathering or in business contacts.

When he had finished this diagram he drew a line connecting up each of the outside lines and the result appeared to be an umbrella, which he said could be used to ward off the storms that appear occasionally on the horizon. These storms he depicted by a series of circles representing storm clouds which he labeled newspaper attacks, radio attacks, radicalism, and political thunder.

As a final appurtenance of the umbrella he depicted the handle as the Advertising-Publicity Section in its work of preparation of campaigns and material which supported all of the ribs.

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Senator Norance Flays Power Industry At Burlesque Political Meeting

MOST vehement of the speakers on the entire convention program, the oratorically famous Senator I. G. Norance brought tears to the eyes of his audience as, with adjectives run riot, he denounced the "merciless machinations" of the electrical industry, and particularly its suave, smiling serpent, the Pacific Coast Electrical Bureau, in an address at the Thursday morning general session.

Reminiscent of that other senator who expends his speech-making efforts in attacks on the "power trust," Senator Norance pictured for his audience the sufferings of a sordid, sorrowful people, all of whose troubles, from unemployment to prohibition, could be laid at the door of the electrical industry, he declared.

Had not electricity, he asked, robbed life of its romance and beauty with its glaring lights that replace the soft glow of the candle or lamp of our fathers, to say nothing of the light from blazing logs in a stone fireplace by which Honest Abe did his early studying?

"Devices of the devil," the senator called the washing machine, vacuum cleaner and electric refrigerator, which were freeing our women, giving them time to waste at such nefarious gambling games as bridge and golf. And not content with thus destroying the happiness of millions of American families, the senator roared, the electric light and power industry is extracting $30 a year from every one of these homes.

The senator likened the operations of the Pacific Coast Electrical Bureau to the lichen whose tiny seeds taking root in the crevices of rocks cause a slow disintegration, allowing the larger seed of a tree to take root and establish itself. Thus does the bureau, he said, enter the barrier of sales resistance, slowly breaking down the walls so that commercial programs of the

industry may take hold and flourish. Proof of the bureau's wide-spread evildoing, he said, was found in the thousands of homes emblazoned with its Red Seal, whose very name leads one to suspect its association with Red Russia and Communism. He begged his hearers to attack without delay the corruption being wrought by the entire industry, and to tear down the insidious work of the Pacific Coast Electrical Bureau as a first step.

True to form, the address ended with a flood of red-white-and-blue, eagle screaming American oratory.

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Forkner Believes Economic "Rests" Necessary

Nature demands a periodical period of rest, even from prosperity. Such was the burden of the talk made by J. C. Forkner, president of the Forkner Fig Gardens, Inc., of Fresno, as a presentation of the Accounting Section at the Thursday morning session. Speaking on the subject, "The Trend of Economic Depression," Mr. Forkner garnished his main theme with innumerable sidelights of humor and sage observations which made his talk one of the remembered features of the convention. The stage behind him was decorated by a chart 7 ft. long, which he said was but half of the one he originally drew of the ups and downs of the economic cycle for 300 years past.

Mr. Forkner differentiated between what he called the old style and the new style of depression. The old style depression was that recorded in Biblical history in which drought or famine came as the result of natural conditions. The new style of depression had been made possible, he said, since the Rothchilds had invented the bill of exchange and the negotiation of financial transactions by means of notes, paper, checks, stocks and bonds. In times of optimism the value of these paper negotiable promises was inflated and made the object of speculation. The natural consequence was that Nature had to restore its balance, according to the laws set down by Herbert Spencer many years ago, and the "wind and air and water" must be taken out of such securities and value restored to normal before continued prosperity could reign.

Among the amusing things he attributed to depressions were the various fads which have characterized the sports and occupations of the public during times of depression. "In the depression around the beginning of the present century," he said, "roller skating became very popular. In the 1907 depression it was ping-pong. In the depression of 1921 it was mah jongg and in 1930 it was pee wee golf."

The similarity of conditions during the various depressions of which he spoke were pointed out by means of newspaper clippings which he read describing conditions at the time of each of the depressions mentioned. By these means he pointed out the similarity even of language describing the conditions and made a great play of the expression "the farmers lost their lands and moved away." Like Chester Rowell, he charged the industry with the responsibility of devising methods for obviating technological unemployment during depressions, and meeting the challenge of Karl Marx who predicted that capitalistic society would cause its own undoing.

George Bauder, San Diego refrigerator dispenser, tells San Gates of Los Angeles how the ice cube makers strain at the border city

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Prize Winning Speakers Are Luncheon Guests

Delivering again their prize-winning speeches, James F. Donohue, Southern California Edison Co. Ltd., and George Carrothers, Coast Counties Gas & Electric Co., appeared before the convention at the Thursday noon luncheon meeting. The former had previously won the Pacific Coast District prize, only to be eliminated in the national semi-finals at Denver. The latter was winner of the northern California semi-finals.

Both speakers, under the title, "The Contribution of Electricity to American Home Life—and Its Future Possibilities," labeled electricity as the greatest single benefactor to home life in America, pointing out the many comforts and benefits which it alone can offer to the housewife.

In speaking of the future of electricity, Mr. Donohue pointed out that "Electricity will be the father of the future home, for his hand will regulate the heat, his hand will produce the ventilation, his hand will effect daylight, and will still continue to lighten burdens and increase comfort. . . . When discussing the future possibilities of electricity in the home, we can readily draw on all our imaginative powers and conclude that nothing is impossible."

Mr. Carrothers, on the other hand, directly prophesied the lines of future electrical advancement in saying, "I believe that the next few years will disclose four important developments—the wireless transmission of power, the universal use of a more perfect system of automatic control, greater economy in the number of individual appliances, and the universal introduction of appliances not now in general home use."

In introducing the prize-winning speakers, George C. Tenney, editor of ELECTRICAL WEST, and chairman of the public speaking committee, explained the purposes of the nation-wide series of contests. He also lauded the caliber of the speeches as indicative of the high type of speaker these contests have developed in a few years. It had been the intention and wish of the committee, he explained, that Mrs. Lillian Broeker, of the Pacific Gas and Electric Co., winner of third place in the national finals at Atlantic City, would be able to appear and address the group, but she had not then returned from the N.E.L.A. convention.

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Transportation Section Urges Safe Driving

Concentrating on one of the major problems of utility transportation, E. C. Wood, as chairman of the Transportation Section, presented a motion picture, "There are Millions in It," before the general session on Thursday morning. Mr. Wood outlined the tremendous loss occasioned yearly by the motor accidents in this country. "In monetary value it is estimated that loss from this cause exceeds $900,000,000 a year," he said, "but this pales into insignificance when the list of killed or injured in these accidents is considered. No one is immune from the possibility of death or injury from this cause and everyone contributes to the settlement of the gigantic bill which motor accidents cause."

The motion picture was written by J. M. Wainscoat and filmed by Sydney W. Green, both of the San Joaquin Light & Power Corp. Throughout the picture the theme shows the most common causes of traffic accidents and how these accidents could have been avoided by the application of the rules of safe driving. Various situations are shown which through the negligence of the driver nearly cause serious injury to pedestrians or other motorists. Each situation is then contrasted with one in which the drivers exercise proper caution and observe the "rules of the road." Practically all situations resulting in accidents are shown to be the result of negligence on the part of either or both drivers.

Great strides toward alleviating the tremendous loss of life and property incurred in motor accidents can be made if the vast fleet of motor-driven vehicles operated by the utilities will set an example of safe driving to the motoring public. The Transportation Section, in accepting the responsibility for cooperating in this campaign, urged the entire electrical industry to appreciate the fact that safe driving is an asset of millions of dollars in not only its saving of lives and property, but also of the good will and public confidence which can be secured through the application of rules promoting road courtesy and safe driving.

Whitsell Urges Informal Conferences Instead of Rate Controversies

POINTING out that while regulation of public utilities in California has been eminently successful to date, Leon O. Whitsell, member of the California Railroad Commission, urged power companies of that state to adopt the principle of regulation by conference rather than by formal proceedings in his address entitled "The Utility of the Future—Self-Regulating" delivered at the general session Thursday afternoon.

That long, contentious rate proceedings are uneconomical and wasteful and that the utilities should give some thought to working out a way by which the enormous cost incident thereto may be avoided, Mr. Whitsell emphatically believes.

"From the very inception of a proceeding to raise or reduce rates, the utilities, the municipalities and other representatives of consumers are resolved into belligerent offensive and defensive camps; suspicion and accusations run rampant. The advocates of the consumer ofttimes anticipate the final results and broadcast what seems to them the inevitable decision of the commission. The utility with its auditors, engineers and lawyers, buckles on the armor of defense and the battle is on. Good public relations cultivated through long years of patient effort take wing, and irrespective of the decision of the commission, scars are left on each side which continue as an irritant and a reminder of a contest which in many cases could have been avoided by the utility through the use of the same degree of good judgment exercised in other walks of business life.

"In my judgment," Mr. Whitsell declared, "the remedy to be applied does not lie in the realm of the law, but in that of human relations and economics."

He then went on to outline what he called "regulation by conference vs. formal proceedings." "The commission," he said, "and its various experts are at all times ready and willing to discuss complaints or problems and to take such action as may be deemed necessary expeditiously to adjust differences which have arisen. However, it is only within the past few years that the utilities of the state have shown a disposition to meet with the commission in conference with representatives of the public and seriously discuss voluntary rate adjustments. Within the past few years there has been in evidence a wholesome willingness to do this very thing."

By means of such conferences substantial rate reductions have been voluntarily effected by the Pacific Gas and Electric Co., the Southern California Edison Co. Ltd., San Diego Consolidated Gas and Electric Co., and other large electric utilities of the state. Yet, Mr. Whitsell believes, the conference method has not been used in many instances where the facts and circumstances fully warrant it.

"Possibly they (the utilities) are apprehensive lest their willingness to participate in such informal discussions may be misconstrued and taken as evidence of the weakness of the position they may eventually elect to assume; or possibly they fear that they may inadvertently or otherwise disclose facts which may be used against them. If either assumption be correct, I feel certain that they are laboring under a misapprehension. These conferences . . . to be productive of the greatest good . . . must be entered into with the distinct understanding that, in the event a satisfactory solution of the problems under discussion is not mutually agreed upon, the position taken or facts developed by either party shall not militate against them in the final determination of the matter, except in so far as those facts may be developed by evidence other than the conference admission."

He spoke of a committee appointed by the American Bar Assn. to study improvements in procedure before public utility commissions. The principal investigation to be undertaken is the matter of increased informality in rate proceedings. Ways and means are to be found for increasing the use of such procedure. Mr. Whitsell believes it simply another indication of a widespread realization that adjustments by conference are desirable and constitute a wholesome substitute for costly rate litigation.

He concluded by saying, "The most obvious improvement of the present system of regulation would be the doing away with these extended legal contests and the substitution therefor of voluntary action on the part of the utilities through conferences with the commission whereby and whereunder voluntary rate adjustments may be put into effect from time to time consistent with the maintenance of a reasonable rate of return upon the capital prudently invested. Such action will certainly remove many of the objectionable elements involved in the handling of rate adjustments, will be a powerful factor in the building up of general good will and confidence, will further eliminate the expenditure of large sums of money and time, and will afford prompt relief without undue delay."

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Talking Movie Glorifies Work of Engineers

That electrically produced power, involving highly technical skill in its generation and distribution, has revolutionized industry, transportation, and home life in America and, to a lesser degree, in Europe, was the story told in "Dynamic America," a picture shown at the Thursday afternoon session by S. J. Lisberger, Pacific Gas and Electric Co. engineer.

In the picture, an official of the Westinghouse Electric and Manufacturing Co. conducted the audience on a tour through factories, where machines perform with accuracy and dexterity; modern homes, with a myriad of appliances; farms, where most work is now done by power; railroads, with electrification throughout; and cities, whose transportation lines are highly electrified.

No convention complete without M. A. De Lew of Associated Oil, and Sam Russell, who represents golf and manufacturers and what not

Throughout the picture, the work of engineers was glorified with dramatization, and the parting thought was that engineering would be still more prominently associated with future developments.

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Clapp Urges Industry to Be More Aggressive

Urging the industry to adopt a position of positive aggressiveness in dealing with misrepresentation of facts, Paul S. Clapp, managing director of the N.E.L.A., warned the convention Thursday afternoon that continued silence in the face of attack was public admission of guilt.

Mr. Clapp pointed out that the light and power companies are under fire from two groups, politicians such as Governors Roosevelt and Pinchot who would make power a political issue, and and a small but powerful group of municipal ownership advocates whose perseverance, zeal and skill in propaganda give them public prominence not deserved. Criticism of the industry, he pointed out, is not coming from customers or stockholders but from these two groups who would make political capital out of misrepresenting facts or who would substitute socialism for individual initiative.

Reviewing the Federal Trade Commission investigation, Mr. Clapp stated that in the three years the companies have been under investigation the commission has spent $500,000 of government money while the utilities have at the same time spent much more than that sum. In his opinion the investigation will run two or three years longer. He gave assurance that the record of the utilities as brought out by the investigation is one of sound

performance and cleanness of conduct which is unparalleled in business or industry.

Other points which Mr. Clapp made included:

"Do not here on the Pacific Coast fall heir to Wall Street's pessimism."

"If curtailment of expense should become necessary, the last place to cut should be commercial expenditures. Aggressive load-building has justified itself in the 8½ per cent increase in domestic consumption during the first four months of this year as compared to 1930."

"The power business is indefinably linked with every other branch of the industry. Unfortunately the power companies cannot just sell raw electricity. Utilization devices must first be sold to the customer. Upon the degree of cooperation displayed in this selling will depend our trade relations."

"The human aspects of our business require the same degree of careful attion and study as engineering, accounting, finance, or commercial development. The real interpreters of the power companies are the rank and file of the employees. They must be imbued with the proper ideals of public service if they are to interpret our business correctly to the public and our customers. We will stand or fall by the impression they make. If the impression is a good one, we will be safeguarded against abusive legislation and excessive regulation."

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Commercial Army Needs Executive Help In Holding Front Line Trenches

"AN executive who realized what he was doing would appreciate that the sales department is the front line—the infantry, with dirt behind its ears—holding the front line, making the advances, keeping back the retreats, and that the entire army cannot move forward until it breaks through and conquers new territory. The heavy artillery of generating plants, the supply division of transmission and distribution, the intelligence corps of engineers, the clerks, the bookkeepers, the headquarters staff, the generals themselves, only move forward when the sales staff advances to new terrain."

Thus hotly spoke the commercial manager, Jack Wise, to his general manager, Mr. Willard, when the latter suggested that the company cease its commercial program and "coast this year," in the playlet presented by the Commercial Section at the close of Thursday afternoon's general session. It was an appropriate ending for a day of presentations by each of the sections representing the various departments of utility operation, for it brought a realization of the commercial responsibilities of every person connected with the business. The sketch was an appropriate climax also for the day's program because it reviewed swiftly the entire range of commercial activity in which any company is interested, ending with this benediction and challenge to all commercial men in the words of Mr. Willard, the general manager:

"Jack, thank God there is still courage in us. If you had taken that lying down I'd have felt that we deserved to be licked by the depression. I believe in you. You deserve to be believed in. You deserve to lead our front line, as you call it, and to hold it. I say to you now, hold it for all you are worth. Today—or perhaps I should say tonight, for it is getting dark, and I haven't much of your lighting in here yet—I have represented the questioning, the resistance, the doubts and fears of the depression. I have beset you, challenged you, lashed you, insulted you, humiliated you, perhaps, even as the economic conditions of today are harassing our industry and all industries. And you have stood up against me unafraid. You have faced the darkest pessimism with constructive realism, with a faith that you and your men could meet it and win. You have displayed a courage and an enthusiasm which I wish all men in our electrical industry might share. And now, like this moon rising over the tops of these dark, black masses of our city, I am going to give you complete assurance that, as the representative now of management, and I hope intelligent and sensible management, as the spokesman for the employees—the army behind you, and of the stockholders—our nation, if you please—I can tell you that they are back of you and will stay back of you to the last man."

This moon, by the way, was one of a number of unusual lighting effects—"paintings in light"—with which the playlet was illustrated and its thoughts given an atmospheric background. In a large window at the rear of the stage a series of scenes was projected in color by means of five synchronized projectors and an effect machine. The latter contributed motion to some of the "paintings." The process was one similar to color printing, each color in the design being applied separately from a different projector and fitted into the design, which literally grew on the screen.

The playlet opened with the general manager questioning each item on the commercial budget and the sales manager answering with his reasons for a continuance or enlargement of the activity. In this way, lighting, power, and merchandising problems were reviewed.

Among the lines were several rather novel ideas or viewpoints. For instance, Jack Wise, the sales manager, showed that a private utility's entire position as a private commercial enterprise rests on its responsibility to "further the use of electricity as only a private enterprise can develop it, or we are a simple public utility whose ownership might just as well rest in the municipality or the state."

Wise also showed that modern, built-in panel lighting holds promise for the first time of a solution to the sale of correct domestic lighting.

To Willard's pessimistic view of the plight of agriculture Wise presented the picture of future agriculture with all the forces now in the laps of the gods of nature and chance under control by the new industrial farmer. As to the merchandising situation, Wise made this penetrating declaration to Willard's remark that marshaling the dealers into a voluntary selling force would be difficult:

"No, not easy, but rather fascinating, if one gets the right point of view toward them. I tell my staff, 'Think

Seven of the brave and fearless toreadors, the Advertising-Publicity Section, who manage to get a finger into almost everything. Bill Cyr, prolific script man; "Spike" Kenyon, chairman of the section; "Mac" McGougan, convention daily managing editor; Earl Nilsson, convention daily political and crime editor; K. E. Van Kuran, Bureau advertising agent; F. N. ("Frosty") Raymond, convention daily chief editor; and Dan Scott, favored candidate for next year's general convention chairmanship

how much more thrilling it is to lead a large group of volunteers, who can have no reason to take your leadership other than their liking you and trusting you and believing in you. Think how much more important your job becomes than mere salesmanship if you can become such a sales manager over a group of dealers whom you must win to you and inspire to hit the line with you and for you.' Then, instead of these men of ours being merely range and water heater salesmen, they stimulate the sale of all appliances."

Of wiring an especially strong point was made that unless this problem was met at the source—in the new buildings going up—the industry doomed itself to future sales resistance. An apt illustration was used depicting a winning hand of cards. The Ace was the company's facilities to serve the customer, right up to the front door. The King was the merchandise and the merchants and the company ready to sell it. The Queen was the housewife already half sold and wanting the appliance. The Ten was the company's favorable domestic rate. Only the Jack, representing wiring, was missing.

The commercial presentation was a product of the special committee appointed by Chairman Stahl to prepare the playlet. The committee consisted of Harry Carroll, Pacific Gas and Electric Co., who is to be vice-chairman of the Commercial Section this year; Pierre Vinet, Coast Counties Gas and Electric Co.; William A. Cyr, ELECTRICAL WEST; Clark Baker, Jr., lighting engineer; and N. H. Graves, Pacific Gas and Electric Co.

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Mullendore Challenges Political and Radical Attacks on Industry

INDICTING those "Problem Discoverers" who operate under the guise of public service, yet who endeavor to tear down the existing governmental structure of the United States while diverting the public on a single so called "issue," W. C. Mullendore, vice-president of the Southern California Edison Co. Ltd., at the Friday morning general session uncompromisingly called upon the members of the public utility industry to end their siege of passive resistance and constructively and vigorously to combat the real public enemies.

Supplementing his widely publicized talk on "political sabotage" reported practically in full in the March 1, 1931, issue of ELECTRICAL WEST, p. 118, Mr. Mullendore cited other grievous errors made by these "problem discoverers" in their attacks on the power companies.

In part, he said:

"Within the past few years the people of the United States have been warned in stentorian tones and black headlines that a new national problem of serious import and gravest menace is threatening the political horizon . . . 'the power issue' . . . . The real issue which . . . . has been raised by the prevailing attacks upon the electric utilities industry is whether the power of public office shall be wrongfully employed to undermine confidence in and destroy the good will of legitimate American business in order to prepare the way for a program in direct conflict with basic American principles . . . . to the end that Socialism shall replace American individualism, and that a few shall be enabled to hold the limelight by posing as defenders of that which they themselves are attacking.

"Within our country, a few individuals, organizations and public officials . . . . are not only creating new problems but contributing to the difficulties of constructive solutions of existing problems. . . . . We (the power companies) recognize the right of any citizen, public or private, to direct attention to mistakes of omission or commission. We have, however, the right to ask and expect that criticism shall be based upon facts and not upon falsehood, that it shall be motivated by a real interest in the public welfare and not by any disguised hatred or by a hidden purpose to destroy.

Representing manufacturers were Ben Holst and Harry Garbutt, the latter doubling as host to the ladies

"The average light and power bill of the American home today is about $2.72 monthly. . . . . If the electric light and power bill were reduced by 10 per cent it would mean less than one cent per day to the average American householder. Why does this item absorb the attention of that group of United States senators and those governors of great states who maintain that electric light and power is the greatest issue before the people of the United States today?"

Mr. Mullendore then proceeded to show the falseness and the venom of the charges put forth by the "champions of the American people." He pointed out that the electric bill is but the minor part of the expenditure of an average American citizen, that many more fruitful economies could be made by the government if these men were sincere, and that more grave problems need solution but have been sidetracked by these men in their zealousness to undo the "power octopus."

Among the foremost real problems faced by the nation and being sidetracked in this vain pursuit of a fantastic "power monster," said Mr. Mullendore, are the problems of mounting taxation, six times the total national electric light and power bill, the high cost of crime, which equals the tax bill annually, prohibition enforcement which costs the equivalent of the nation's light bill, the farm problem, which would be a more appropriate issue for a senator from an agricultural state, the bonded indebtedness of the nation, the post office deficit and the treasury deficit, and the plight of the railroads, which have already been crippled by government shipping competition and over regulation.

He went on to say: "What, then, is our duty? Our duty requires not only an exposure of their misrepresentations but of the true motives and character of these impostors who, under the guise of serving the public interests, are in fact doing their utmost to injure the public interest . . . . We are public servants. Someone must assume responsibility and leadership in checking malicious destruction of the interests which we hold in trust. Who will lead if not those who know the truth and who have the primary responsibility in advising the public of the truth?

"I am not alarmed as to the immediate fate of the electrical industry in the face of these attacks . . . . The real threat is not so much to our industry as to basic American principles . . . . The peril is that the American people will be dominated by or follow the leadership of those who employ the weapons of hatred for political gain and for the advancement of theories which strike at the root of American institutions."

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Women Also Tell Story With Playlet

Under the significant title, "Are We In It?", the women's committee told its story to the executives of the industry in a cleverly written playlet which was presented at the Public Relations Section session on Friday morning. Miss May Layton as the well informed woman employee ably demonstrated the advantages of women's committee training in handling the various callers—a dissatisfied customer, a woman asking questions and a Lady Leaguer, all of them amusingly portrayed by Mrs. Marge Edwards, who had been bothering Miss Marvel Murray, the well intentioned but untrained new girl. Mrs. Edwards not only acted in the skit but was also its author. The clever lines and effective acting kept the audience chuckling and effectively carried the message of the value of the women's committee in public relations work.

E. B. Criddle, chairman of the Public Relations Section, in introducing the features of the program on Friday morning's general session devoted to the Public Relations Section, pointed out the importance of this work to the industry and particularly as it affected the employees of the companies in their contacts with friends and neighbors.

Industry's Greatest Problems Solvable Only by Human Understanding, Says Owens

THREE of the greatest problems facing the industry—the reaction of the public to utilities, the insurance of stability of employment to employees, and the relations of the public utilities to the dealers in merchandising—can be solved only by human understanding, it was pointed out by James F. Owens, president of the National Electric Light Assn., at the concluding address of the Friday morning general session. Mr. Owens is always very much of a human being himself, and his addresses at former conventions have distinguished him in this respect. It was no surprise, then, to have him depart from the formal style common to presidential addresses and to enter into a friendly discussion of some of the most pressing problems of the industry in terms of human relations.

Complimenting the radio broadcasts of the "Trusty Power Workers," one of which had been given just before his address, he declared that he had long had a feeling and expressed it many times that if the industry could harness up its human resources to tell its story it need never fear the attack of politics on the outside. He reiterated the importance of the impressions made by men out on the firing line in their daily contacts. "Oh, if we could only get executives to see the effectiveness, the good that such people can do in their relations with the public, how far they will go if inspired to improve their company's relations," he said. "Such men will go far beyond their daily responsibilities to make friends for their company . . . . Nothing at this time is so important.

"Such a responsibility I do not believe can be found in any other particular line of activity as greatly developed as it is in the utility industry. In the final analysis, anything else is valueless except as it helps human beings. The engineer who does not have the responsibility for the people working for him and who does not see himself as more than a builder of power plants, transmission lines, properties and equipment, is not a utility man, he is a mechanic. The manager who does not feel himself responsible more for the human beings in the organization than he does for the accounts, the finance, is not an executive or a manager, he is a mere clerk. The executive's job is with the human side of the company's operations. Anyone can build power houses, transmission lines, handle the accounts and finances. That is not the job for the executive. It is his duty to develop the people of his organization."

Representing the Electragists were Edward Martin, president of the Northern Chapter, and Clyde Chamblin, former national president, and between them is Ralph Wiley, president of the Inspector's association

Mr. Owens then touched upon the problem of government in business. He pointed out that very few people realize, even in the companies themselves, that the government every day seems to be departing farther and farther from its original purposes and goes more and more into the homes of the country.

"If the people of the nation can be made to understand that they work one day out of seven to support some form of government, national, state or local; if the people of the industry, knowing this, tell their friends, I wonder if John Jones will not be in a better position to weigh what he pays to support the government against what he pays the utility for his electric light bill. If he does, he is not likely to wish the government to do much more or to interfere more with private business."

Mr. Owens commended the address made at the national convention by Girard Swope in which he pointed out the danger existing to capitalistic institutions if the business conditions prevalent during the past few years and their resultant effect upon the human being are allowed to be repeated in the future. He advocated that reserves be set up to protect the human element against suffering from lack of employment and income even as the industry sets up reserves as safeguard against failure of its mechanical or electrical equipment. "If we do not meet the demands made by this challenge, we can expect that strong demands will be made on the government to do it for us." Again he asked, "Who will tell me that a man who has dedicated his entire life to this business is not more important to us and should not receive as great care as we give a transformer?"

One of the new features of the N.E.L.A. set-up, he said, was the formation of a Legal Section, whereby the legal departments of various utilities could be brought together to study utility laws. He said it would prove desirable to bring these lawyers into conventions so that they could be taught that the legal aspect of their service was the smallest part of their duty to the company, that they too might be inspired with the public service ideals which characterize the rest of the company personnel, so that they might understand better the necessities of "the human beings served by the company, who form the only excuse for our existence." Next he quoted Senator Borah when he stated that a government bureau is the poorest excuse for a business institution that exists, and further when he made the statement that one billion dollars a year were wasted in bureaus maintained by the government at Washington. Mr. Owens made a very strong point of the fact that the bureaus were wasting twice the total electric light bill of the nation, if Mr. Borah's estimate was correct. He further pointed out that 85 bureaus in Washington cost more to operate at the present time than the entire cost of the government of 25 years ago. Mr. Owens maintained that the industry always has within itself the solution to any problem presented to it without the need to appeal to government for its solution.

These two account for the success of the Accounting Section: A. B. Carpenter, head statistics juggler for the P.C.E.A., and J. A. Cannon, his henchman

Speaking frankly on the subject of merchandising, Mr. Owens described the fear merchants held for the future existence of retail selling. The great tendency to purchase at wholesale by large organizations, and the short-sided practices of many electric companies which in no way would square with good ethical business conduct, were causing these merchants to fear the utilities and seek government relief from this possible oppression. He pointed out that because of acts of careless utility companies in other parts of the country bills might be passed in local legislatures.

Mr. Owens insisted that it was the duty of the industry, not its right, to assist in the sale of appliances in order to put to useful purposes the electricity which the utility companies generated and brought to the customer's door. He said that its efforts were in the merchant's interest too and that the problem was of convincing each other of their relationship and thereby converting the antagonism present at the moment into cooperation which would be an asset. This could only be accomplished, he said, by getting around the table, not with the sales manager, but the top executives of the company and the representatives of the retail trade. He felt that the situation had gone beyond the state where the sales manager could any longer cope with it; that it was an executive matter and deserved the attention of the highest executives of the industry. Mr. Owens concluded his remarks by pointing out and recommending the adoption and practice of the merchandising principles adopted at a joint committee of utilities and associations of retail merchants in June at Atlantic City.

"Trusty Power Workers" Demonstrate Broadcasting Possibilities

FOUR linemen, "The Trusty Power Workers," worked themselves very strongly into the hearts and sympathies of those attending the convention, as they appeared over the hotel's sound system by means of electrical transcription, as the presentation of the Advertising Publicity Section. These radio broadcasts were written and prepared under the direction of William A. Cyr, associate editor, ELECTRICAL WEST, and recorded by the MacGregor & Ingram laboratories of San Francisco. There were four episodes presented, one each morning, the final one as the finale of an address, "Something Ought to Be Done About It," made by Mr. Cyr at the Friday morning general session.

The story proved to be very dramatic, rising to a climax in the last episode wherein one of the linemen rescued a little child from a forest fire.

These sample programs, Mr. Cyr explained, were written to appeal most particularly to the working class—"that great mass of voters reached daily and bombarded daily" with a barrage of anti-"power trust" propaganda. He gave an interesting analysis of the psychological reasoning that led to his choice of this group as the focal point for the program's interest. While the effect of the campaign being waged by politicians and by chains of newspapers against private ownership of utilities may be to arouse suspicion and fear among all classes, even the electrical industry itself, Mr. Cyr pointed out that the effect on the working class is more intense, creating panic and arousing hate. And this also is the heaviest voting class. It is the very strength of this group at the polls, he said, that has given rise to the strong support of public ownership (which has been "sold" so strongly to this group) by so many politicians seeking office.

Mr. Cyr showed how radio offered the industry a chance to combat the attacks of its enemies, whereas space, even paid advertising space, in newspapers often was barred to it. "Moreover," he said, "in most instances advertising men feel that the public relations message, the institutional copy, is wasted ink, especially in some newspapers," with their endless columns of counter-publicity.

"There has been some fear expressed," he said, "lest the newspapers, jealous as they are of their advertising revenue, would resist this industry's use of radio advertising. The answer to that is that newspapers should be used even more extensively than at present in selling our products, appliances, current, special services . . . But for general publicity, the newspapers do not want us to try to use their columns."

Granted then, that the industry must tell its story by means of radio, Mr. Cyr termed the four programs that he had prepared the "testing ground for one idea as to *how* the industry may use radio." He asked that a committee of the Public Policy Committee make it its specific duty to determine whether this were the type of program that might be best employed.

By choosing for his characters four linemen, Red, Fat, Weary, and their foreman, Hank, Mr. Cyr in his programs would establish the humanness, the normalness of public utility people, thus debunking fears of the menacing "power trust" by depicting the so-called mysterious "inside" works of the machine as harmless, necessary policies and practices; he would link the employee that everybody knows and has no fear of with the company—"with the 'power trust,' if you please, trustee of the public's welfare." Through the mouths of his linemen characters he would explain such matters as the labor attitude, the basis of pay, the employee benefits, and "debunk" union labor's attacks on that score. His homely, appealing characters may be made to inquire into regulations, rates, holding companies, and reduce them by simple analogy to understandable facts, thus removing all fear concerning them.

Admitted that there are few counter-attacks so forceful as ridicule, this was used with telling effect in the announcer's statement concluding each program, when he referred to the "power trust" by name as meaning "trustworthy," "trustee of the public's welfare," —thus, as Mr. Cyr explained, "giving it a bath, making it respectable and changing its meaning."

Appropriately suntanned A. B. Day, newly elected president; and the pioneer developer of a new day in the San Joaquin garden of the sun, A. G. Wishon

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Winning Essayist Reads Prize Contribution

Don Ray, Pacific Gas and Electric Co., chairman of the General Bureau of the Commercial Section, at the Friday morning session presented the first- and second-place winners in the association's essay contest on "The Electric Appliance — the Household Servant." The winner, Roy W. Swift, Jr., transportation department, Los Angeles Gas and Electric Corp., was absent, however; William C. F. West, statistician in the same company, who was awarded second prize, read his essay before the convention.

The winning paper had as its theme the fact that "the electrical servant never takes any time off." Showing that today's model home offers the utmost in comfort, and that electricity has played the major role in providing the comforts, it went on to prove that electricity and electrical appliances have answered practically every need of the citizen in the promotion of his happiness. Only in homes possessing electrical service, Mr. West's paper contended, can real contentment be found, for electrical servants are more satisfactory and less expensive than human servants.

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Informality Also Marks Close of Convention

"Delightfully informal" was a term that could be applied to the closing business session of the convention on Saturday morning, June 27. There were only a few present and so President A. M. Frost abandoned the chair and sat down on the edge of the platform close to the small group gathered. No formal program had been arranged and only the closing business of the convention had to be transacted.

Sam Gates reported for the committee on the president's report. This report, itself, was as characteristically different from the usual style of reports on presidents' reports as was President Frost's report itself a deviation from the usual practice. It commended the president on its humanness and declared that it had established a tradition for a new kind of presidential address. It commended the industry to a serious consideration of the excellent humanizing remarks made by the president and ended by asking him to retain his active interest in the association and its committee work.

After a reading of the report of the committee on resolutions by W. A. Cyr, substituting for George C. Tenney, Mr. Frost announced that he had been appointed to the chairmanship of the Public Relations Section for next year, and would endeavor to carry through the excellent work started in this convention to some successful culmination. In the absence of the new president, Addison B. Day, Dan Scott of the Los Angeles Gas and Electric Corp., accepted the president's badge on behalf of Mr. Day, who was called to Los Angeles on an important Community Chest drive.

The meeting was adjourned after W. L. Frost had made a little speech presenting A. M. Frost with the past-president's badge and this new past-president had made a concluding tribute to the friendship and cooperation of the people in the industry who had made his year as president, and the convention just concluding, so successful.

Three-Ring Circus Heads Novel and Spectacular Entertainment Program

A THREE-RING circus, literally and actually, was the entertainment for the grand ball on Friday evening. With three platforms set one at the center and one at each end of the large banquet hall the circus acts were put on simultaneously on all three stages in regular circus manner.

When the crowd had seated itself at the banquet tables, the lights were dimmed very low and from eight great series of columns constructed of wooden framework and white silk burst into color to decorate the hall. These columns were ingeniously constructed with baffles so that the colored light from one column would not spill into the adjoining column of a different color, the special Weulker reflectors giving control of the light within the area, and also providing two colors often, one at the top and one at the bottom of the same column.

The circus was appropriately begun by a parade throughout the hall. In the parade appeared all of the performers plus a number of animals made up of men in costumes. One of the amusing features was a parade of animal cages consisting of little toy wagons on which were mounted wooden cages containing all manner of fake articles.

The program itself consisted of fire eaters, cowboy roping acts, roller skating stunts, dancing numbers, and a contortionist. Golf prizes were distributed at an intermission in the circus program. There were no speakers during the banquet.

"Fun-night" was Thursday, and fun night it proved, for under the direction of Frank Bevan, himself, interlocutor and legerdemain artist of the program, assisted by Al. C. Joy, W. A. Cyr, Harry Thomas, Pat Curren, John Otterson, Clyde Baugh, Willis Winter, Phil Sapiro's orchestra, Vic. Hartley Garrett Van Buren, J. T. Donahue, and Jack Gilbert as endman, a male choir from the Monterey Peninsula, and a quartet from one of the power companies, Miss Brissac of the Coast Counties Gas and Electric Co., and others in the industry, the entertainment was a veritable electrical revue.

Beginning with a scene in a hotel room in which the committee preparing the show was reminded by Mr. Joy that it hadn't prepared its show as yet and ending up with the minstrel show at the end instead of at the beginning, the idea carried through was of a try-out of various ideas before the convention chairman in order to get his approval on them. Included in the show was a skit presented by Cliff Russell depicting an electrical contractor, Miss Dierssen depicting a housewife and Pat Curren depicting the utility salesman. This show carried an industry message. All the other features were frivolous in character and the outstanding stunt was a burlesque on the meeting of Sir Hubert Wilkins and Von Eckener at the North Pole.

Showmen stars of the fun night and minstrel: Bill Winter, the disappointed lecturer, Harry Thomas, the undersea traffic cop, Pat Curren in every act, and Frank Bevan, magician who performed the miracle of directing and staging

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Illuminating Artistry Makes "Venetian Nights" Real

Venetian Nights Entertainment, an outdoor feature at the swimming pool, the program stated. Thus on Wednesday was launched the first of three nights of novel and original entertainment for the convention, each of which was so entirely different from the other as to arouse the admiration of the most sophisticated showman.

Calling upon Vincent Duffey, creator of the beautiful lighting effects at the Bohemian Grove and Family Club productions, the convention was treated to outdoor spectacular lighting of a kind which it had never previously experienced. The difference in treatment between that of the average illumination engineer and of the artist, as exemplified by Mr. Duffey, was in the delicacy of the treatment of the lighting. The color combinations were indescribable and the smoothness with which the transitions were made were so subtle as to be breath-taking.

The effect was produced in the trees which form a background to the pergola at the swimming club. These trees are in some cases as many as a thousand yards distant from the pool, but this fact only added to the attractiveness. Wuelker aluminum reflectors mounted in the trees themselves and equipped with color screens and on control circuits to dimmer boards located many hundreds of yards distant were employed in the physical effect. The most spectacular use of light was that in the contrast of one color against another on the gnarled and twisted branches of the Monterey pines. Another marvelous effect was produced in a large clump-like bush at one side of the stage. It appeared to have flames in the interior, shining against the green coolness of the exterior. Another tree at the other side of the stage appeared to be gold-leafed with deep red tints on the interior. The grand finale was produced by the igniting of great masses of green and red fire hidden far behind in the trees, flooding the entire sky and the great mass of trees with these two colors.

A beautiful floral effect, floodlighted, prepared by the lighting committee, will be described and illustrated in a later issue.

Previous to this finale, beautiful effects were produced at the pool over which an arched bridge had been built and a gondola provided for opera singers and characters in the costume of medieval Italy. Music and dancing and Italian songs lent enchantment to the Venetian entertainment. A perfect moonlight contributed to the man-made beauty of the scene.

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Mulvany Wins Convention Golfing Honors

Convention golfing honors went to F. A. Mulvany, Pacific Coast manager of the R.C.A. Radiotron Division who shot an 81 to win low gross in Class "A" as well as the Byllesby Cup in the annual convention tuornament Friday afternoon. Low net honors in Class "A" went to M. H. Schnapp, General Electric Co., San Francisco.

P. M. Downing, Pacific Gas and Electric Co., won both the Pelton Cup and low net in Class "B." P. G. and E. golfers scored almost a clean sweep in the men's division, other winners being H. A. Lee, Red Bluff, low net Class "B"; F. R. George, San Francisco, low gross Class "C"; John Hunt, San Francisco, low net Class "C"; and H. B. Heryford, Stockton, Wholesalers' Central Station Cup.

In the "kicker's" handicap, first prize went to Harold Thrane, General Electric Supply Corp., Los Angeles; second prize to Pierre Vinet, Coast Counties Gas and Electric Co., Santa Cruz, and third prize to J. G. Rollow, Los Angeles Gas and Electric Corp.

Women's putting honors went to Mrs. F. O. Dolson, Riverside, with Mrs. D. E. Harris, San Francisco, taking second place. In the women's tournament which was conducted on a blind bogey basis, first place fell to Mrs. W. W. Glosser, Oakland, and second place to Mrs. S. J. Lisberger, San Francisco.

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Among the natural scenic beauties of the convention were many helpful wives, of which Mrs. Harold T. Sutcliffe and Mrs. Harry Thomas were charming examples

Calculating Voltage Drops

In Working on Three-Phase, Four-Wire Lighting Services, Some Quick, Easy Method of Sizing Conductors, Such as Is Offered Here, Is of Value

By D. S. BOWMAN

Consulting Engineer, Los Angeles

THE extension of 4-wire, 3-phase grounded neutral lighting services from network systems, and the carrying of 120/208-volt 4-wire runs through into 4-wire branch circuits, makes it necessary to have some ready method of sizing conductors for pre-determined voltage drop. In general, most branch circuits, whether 3-wire or 4-wire, will have unbalanced connected loads because exact balance usually is difficult to obtain. A little study of the effect of unbalancing will assist in solving the problem.

Whether circuits are single-phase or multi-phase, in a well planned layout the voltage drop is logically proportioned between feeders and branch circuits and the total kept within a reasonable limit. It is generally accepted that the total drop from service switch to loads should be held within 3 per cent of rated voltage.

Tables of ampere-feet are commonly used for finding the proper wire sizes. For single-phase and d.c. circuits such tables have been calculated using the well known formula:

$$V_d = 10.8 \times A \times 2F/CM = 21.6 \frac{AF}{CM}$$

where V_d = volts lost; A = amperes (per terminal); F = feet one way, i.e., one-half actual circuit length; and CM = circular mils. The constant 10.8 is the ohmic resistance of one mil-foot of copper of 98 per cent conductivity at 77 deg. F.

This formula will also determine the drop in any one of the three legs of a 3-phase, 4-wire, star-connected circuit, provided the value for current be the average of the currents in the given phase wire and in the neutral conductor.

For balanced 3-phase circuits either star or delta, the formula becomes

$$V_d = 18.7 \frac{AF}{CM}$$

In this case the constant 18.7 is obtained by multiplying the previous constant of 10.8 by $\sqrt{3}$. This last factor enters because voltage and current and hence the drop differ 120 deg. in phase in the phase conductors.

With unbalanced loads on 4-wire 3-phase branch circuits, where outlets connect between the neutral and phase wires of a star-connected circuit, the drop still depends on the current, distance and wire size, but because of the unbalanced phases it is desirable to find some rational and ready method of proportioning the sizes of conductors. Under any unbalance there will be some current in the neutral wire and differing current values in the phase wires.

For analysis we may consider a 4-wire branch circuit

TABLE No. 1

A	B	C	N	I
10	10	10	0	5
10	10	8	2	6
10	10	6	4	7
10	10	4	6	8
10	10	2	8	9
10	10	0	10	10
10	8	8	2	6
10	8	6	3.46	6.73
10	8	4	5.3	7.65
10	8	2	7.2	8.6
10	8	0	9.16	9.58
10	6	6	4	7
10	6	4	5.3	7.65
10	6	2	6.9	8.45
10	6	0	8.7	9.35
10	4	4	6	8
10	4	2	7.2	8.6
10	4	0	8.7	9.35
10	2	2	8	9
10	2	0	9.16	9.58
10	0	0	10	10
8	8	8	0	4
8	8	6	2	5
8	8	4	4	6
8	8	2	6	7
8	8	0	8	8
8	6	6	2	5
8	6	4	3.46	5.73
8	6	2	5.3	6.65
8	6	0	7.2	7.6
8	4	4	4	6
8	4	2	5.3	6.65
8	4	0	6.9	7.45
8	2	2	6	7
8	2	0	7.2	7.6
8	0	0	8	8
6	6	6	0	3
6	6	4	2	4
6	6	2	4	5
6	6	0	6	6
6	4	4	2	4
6	4	2	3.46	4.73
6	4	0	5.3	5.65
6	2	2	4	5
6	2	0	5.3	5.65
6	0	0	6	6
4	4	4	0	2
4	4	2	2	3
4	4	0	4	4
4	2	2	2	3
4	2	0	3.46	3.73
4	0	0	4	4
2	2	2	0	1
2	2	0	2	2
2	0	0	2	2

as comprising three 2-wire circuits each consisting of one phase wire and the common neutral, but with the difference that the current in the neutral may be different from that in any phase wire. It will be evident that the voltage drop in any one phase will be the sum of the drops in the corresponding phase wire and in the neutral, and will therefore be the same as if the average of these two values of current should flow in a 2-wire circuit of the same length and size of conductors.

It is desirable here to observe how the neutral and also the average current changes with variation in current in the phase wires. The connections would be as in Fig. 1, with 208 volts between phase wires and 120 volts from any phase wire to neutral. Also let

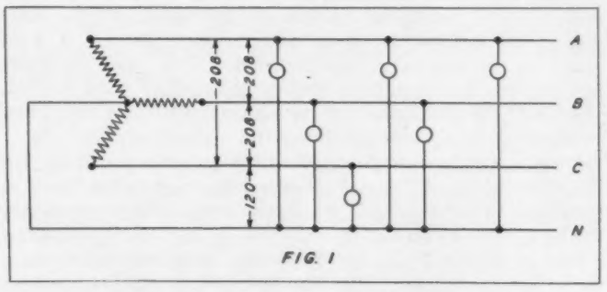

FIG. 1

Connections in typical four-wire branch circuit

A = current in phase A conductor
B = current in phase B conductor
C = current in phase C conductor
N = current in neutral conductor
I = average of N and whichever of A, B, or C is the greatest.

Table No. 1 illustrates the variation of neutral and average current values with different loads on the individual phase conductors. To facilitate showing the proportional variations, a maximum value of 10 has been assumed for current in a phase wire.

Inspection of this table will indicate that the condition for minimum drop with given current in any one phase will occur when the remaining two phases equal the one given, that is, all phases balanced. It also indicates that with one phase zero when the other two are equal the neutral current is of the same value as in each of the two loaded phase wires. Similarly, with but one phase loaded and the remaining two phase wires carrying zero current, the neutral current is equal to that in the one loaded phase wire. For intermediate amounts of unbalancing, the neutral current is of some intermediate value, the exact current for which may be calculated by the following:

$$N^2 = (A^2 + B^2 + C^2) - (AB + AC + BC)$$

Consideration of the tabulated values also shows the worst conditions occur with zero current in one or two phases. With any or all of the 3-phase wires fully or partly loaded the average current, I, to be used for figuring drop on the most heavily loaded phase, will approximate 75 per cent of the load connected on that most heavily loaded phase. It therefore appears justifiable and reasonable to use this value of 75 per cent of the greatest conected load on any one phase of a 4-wire 3-phase circuit as a basis for calculating drop when sizing the conductors.

On this basis, for a 4-wire 3-phase, 120/208-volt, star-connected circuit, the voltage loss would be as follows:

$$V_d = 0.75 \times 21.6 \frac{AF}{CM} = 16.2 \frac{AF}{CM}$$

where the drop in voltage is taken between the phase wire and neutral, viz., in the 120-volt side.

Ordinarily, however, calculations are made to determine the size of wire for a predetermined drop. So this formula then becomes:

$$CM = 16.2 \frac{AF}{V_d}$$

The value of A as used here is the current in the most heavily loaded phase wire. If the load were 1,200 watts on that phase, the current would thus be 10 amp. at 120 volts.

In using this formula for branch circuits where the loads are first obtained in watts, it is more convenient for practical and ready use to make a table of limiting distances for various wire sizes and volts drop. From such a table the wire size can quickly be found upon knowing (*a*) watts on most heavily loaded phase of the 4-wire branch, and (*b*) distance to load center of that phase. Where there may be considerable difference in the distances to load centers of different phases, then use that phase for which product of watts and feet is greatest. Such a table is given here as Table No. 2, and if an extension of these figures is desired it may readily be calculated from the figures here given.

TABLE No. 2

Voltage Drop in Four-Wire Three-Phase Branch Circuits

Watts per Phase	Amps. at 120 V.	Circuit Length in Feet — One Way							
		1.2 Volts Drop = 1%				2.4 Volts Drop = 2%			
		No. 14	No. 12	No. 10	No. 8	No. 14	No. 12	No. 10	No. 8
100	0.83	365	580	920	1467	730	1160	1840	2935
200	1.67	182	290	460	735	365	580	920	1470
300	2.50	121	193	307	490	243	387	615	980
400	3.33	91	145	231	367	183	290	462	734
500	4.17	73	116	184	292	146	232	368	587
600	5.00	61	97	153	245	122	193	307	490
700	5.83	52	83	132	210	104	166	264	420
800	6.67	45	72	115	183	91	145	230	367
900	7.50	40	64	102	163	81	129	205	326
1000	8.33	36	58	92	147	73	116	184	294
1100	9.17	33	52	84	133	66	104	168	267
1200	10.00	30	48	77	122	61	97	154	244
1300	10.83	28	45	71	113	56	89	142	226
1400	11.67	26	41	66	105	52	83	132	210
1500	12.50	24	39	61	98	48	77	123	196

Estimating Procedure

Best Estimating Methods Have Been Combined Into One, Approved by a Group of Electragists, and Are Presented Herewith

By W. H. HYDE
Estimator, George L. Patterson Company, Los Angeles

NEARLY every contractor has an individual method of checking quantities and estimating a prospective job; many have felt and expressed the need for a logical, well grounded procedure that could be followed by a bidder for nearly every job. The following plans were presented for discussion at one of the meetings of the Estimators Section, California Electragists, Southern Branch, and created so much interest that discussion was continued at later meetings. With the idea of benefiting others in the craft, a summary of the logical estimating procedure is presented herein.

It is to be assumed that the reader has a technical knowledge of estimating; therefore the plan is submitted as a guide to the elimination of unnecessary work and to make certain that all items that go to make an accurate estimate are included.

Chronological procedure is followed, as indicated in the order named below:

1. (*a*) Title and location notations.
   (b) Status of the contractor or owner relative to payment determined.
2. (*a*) Read specifications.
   (*b*) Scan plans.
   (*c*) Make notes.
3. Make a layout of the tracing.
4. Determine size, number and type of panels.
5. Make sketch of main board or main service switch, etc.
6. Count outlets and list them.
7. Scale layout or tracing and tabulate systematically.
8. Scale service and sub feeds and tabulate.
9. Take off special materials such as signal systems, clocks, motors, etc.
10. Total quantities.
11. Summarize systematically and apply labor units or cost.
12. Price.
13. Add job factor.
14. Add job expense.
15. Mark up for overhead and profit.
16. Make final quotation.

Title and Location—This, of course, is quite essential. It provides a means of filing for future reference, locates the job for the utility companies, should information be necessary on underground service, etc., and determines the inspection district and governing rules.

Status of Contractor or Owner Relative to Payment—Another important item and one many times overlooked by the estimator. The consideration of this point before any work has been done on plans will often save the contractor much expense and serious credit situations.

Read Specifications, Scan Plans, Make Notes—The items mentioned need very careful consideration before an accurate estimate can be made. Many times reference is made in the specifications to certain markings on the plans which might be misinterpreted if quantities were taken off before the specifications were read. A good plan is to compare specifications with the drawings during the reading, thus becoming familiar with the job. Carefully note any and all unusual conditions or special items.

Make Layout or Tracing—This item is probably the one an estimator neglects more than any other and, in the opinion of the careful estimator, is a very necessary procedure. As comparatively few plans are engineered, it often becomes necessary for the estimator to engineer his own plans in order to figure the electrical work accurately. Anyone with the intelligence of an electrician can mark plans showing circuits and circuit runs, feeds and sub feeds, together with conduit and wire sizes.

The plans having been scanned as directed in step No. 2, any irregularities or special architectural conditions have been noted, and the making of such a layout has thus been materially aided. Make a complete layout, using a white or yellow pencil whose mark erases easily. This step requires very little effort and later more than recompenses an estimator for his pains. After the layout has been made, a good plan is to make a tracing of it. This becomes valuable if the maker be awarded the job.

Determine Size, Number and Type of Panels—If step No. 3 has been complied with, all that is necessary in step No. 4 is to make a list of the panels.

Make Sketch of Main Board or Service Switch, etc.—When the sketch of the main board or externally operated switch set arrangement is made, an accurate estimate of switches, fuses and resultant labor to install can be made.

Count and List Outlets—Now arrives the time in the procedure in which to count and list the outlets. This should be done on a form of individual make or on one of the many forms available from either the Electragists or other sources. However, it is a good plan to use the same type of form for all estimates.

Scale Layout or Tracing and Tabulate Systematically—This step calls for the scaling of the tracing or layout and the systematic tabulation of results. Little comment is necessary on this, providing the third operation has been complied with.

Possibly it would be interesting to point out that of the numerous methods proposed for taking off runs of conduit, use of the rotometer has the greatest merit and in discussion was revealed to be the method most commonly used. A great deal of caution is necessary in taking off these quantities for upon accuracy may depend the getting of the job and certainty of costs.

Scale Service and Sub Feeds and Tabulate—This, too, is important in compiling an estimate, and again the need of making a riser diagram or a sub feed layout is evident. This can be done on the plan sheet or on a separate sheet, as desired.

Take Off Special Materials Such as Signal Systems, Clocks, Motors, etc.—This operation brought forth con-

siderable discussion as to the advisability of segregating the materials for special systems as enumerated. In the opinion of the majority, the best method consisted of taking off these quantities separately and listing them under their proper headings.

Total Quantities, Summarize Systematically and Apply Labor Units or Cost—The estimate has now reached the point at which the quantities must be totaled in their respective columns and then summarized. Systematic and careful listing of these quantities is necessary. At this point labor units can be applied to quantities.

Price—This operation, pricing, will be simple if the estimator has listed carefully his quantities as set forth in step No. 11.

Job Factor—Job factor has considerable bearing on the final estimate. Often it becomes an important and deciding point, many times determining whether or not it is possible to make a profit on the job involved.

Some general contractors cooperate with their sub-contractors; others give them no consideration, making no suitable provisions for installation of electrical work or for keeping refuse and material out of their way, and allow numerous other interferences that tend to hold back the progress of the job.

Even climatic conditions must be taken into consideration. Many items should be considered as to their material effect on the cost of the job and must be provided for in job factor.

Expense—An item that must have due consideration in a bid and of necessity must be taken care of under a separate heading is general expense, including inspection, incidentals, freight, carfare, board, trucking and bond.

Mark Up—This is a step that naturally takes its place among the important items to be considered and should include the per cent of overhead and then the profit.

Final Quotation—This is the last item in the procedure. If due consideration has been given to the previous items, it should be a fair price for both the electrical contractor and the person to whom the bid is submitted.

Some estimators may have shorter cuts and some may take the steps enumerated in a different order than mentioned in the foregoing, but, as brought out in the meetings devoted to this subject, some definite, thorough and systematic method of procedure must be established. It is believed that the method suggested will assure the contractor of an accurate estimate with a minimum amount of labor.

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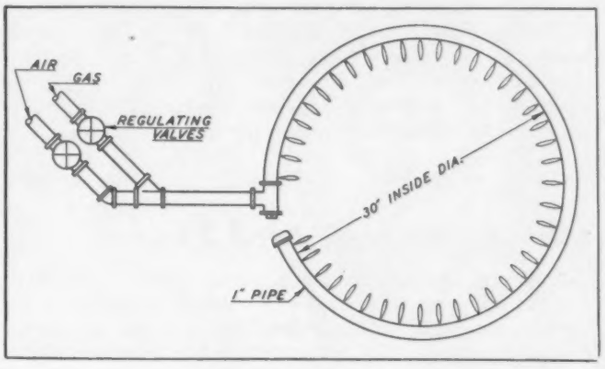
Burner Aids in Repair Work

USUALLY more difficult than placing on, is the removing of large collars, blades, or bells which have been shrunk tight on armatures, high-speed rotors and other apparatus. If the construction of the apparatus does not lend itself to an effective set-up in the press, or even resists special pullers, the illustrated device, made of 1-in. pipe on a 15-in. radius, often solves the problem. On heavy work, 2- to 4-in. space should be allowed between the pipe and the work for free burning of the



Details of burner

flame; 1 to 2 in. is sufficient on wider jobs. The pictured burner is sized for work on 21- to 25-in. bells over the ends of a high-speed turbine field. The flame jet orifice may be sized and spaced according to the judgment and the size of the flame needed. Here the holes are of 1/16-in. diameter, spaced 1⅛ in. apart.

When manufactured gas is available, the burner can be operated as an ordinary gas and air blast-torch. However, natural gas does not burn as well from such a simple orifice, and for each hole it may be necessary to provide a jet, which may be purchased from any supply company.

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Opinions Differ on 110-Volt Fatality Cause

IN THE Jan. 1 issue of ELECTRICAL WEST it was reported that Frank Short, engineer for the Industrial Accident Commission of California, at Los Angeles, maintained that 110-volt alternating current is in reality equivalent in physiological effectiveness to 310 volts direct current. His explanation was based on the theory that, during the brief interval between maxima of opposite sign, the body must react to this maximum difference in voltage.

Two correspondents of ELECTRICAL WEST differ with Mr. Short. George E. Boreham, of Livermore, Calif., says it "couldn't possibly be more than 155 volts under the stated conditions. I would like to see an argument on this question."

Prof. W. B. Kouwenhoven, of the Johns Hopkins University School of Engineering, writes: "I . . . . have read Mr. Short's ingenious explanation of the danger of 110-volt a.c. shock.

"In our experimental work on rats we have proved that 110-volt a.c. was more dangerous than the corresponding d.c. voltage and that the same is true of 220 volts. Circuits of 500 volts, both continuous and alternating, produce the same effect as nearly as we could judge. At 1,000 volts, however, the d.c. circuit is much more dangerous than the corresponding a.c. voltage.

"If Mr. Short's explanation of the danger of 110-volt circuits is a correct one, we can expect the same thing to hold on the higher voltage. However, such is not the case. I know of no satisfactory explanation."

The editors of ELECTRICAL WEST invite comment on this and other controversial articles which have been or may be printed in the magazine.

Wanted— An Idea

Maybe It's Here—That Idea You've Been Looking For. All Are Good and New to Someone—Worth Using Now or Storing Away Until a Rainy Afternoon. Send in Your Idea for Someone Else

IDEAS, some old, some new, all new to someone. Just the bare idea with extraneous matter excluded—like nuts with shells cracked and discarded, only the meat remaining. That's what the new *Idea Exchange* will be—a service for merchandisers by other merchandisers. Ideas for selling, for advertising, for displays, for sales letters, for plans, for plots or stunts or methods.

Read them, use them, file them for future use. Adapt them, adopt them, convert them, combine them. Whatever you do, translate them into sales, build them into business.

And when you have taken what you want, send *your* ideas into the exchange. By giving you'll get more. There's no charge for ideas you use, but we'll pay for ones we can use—and we want to use many. Write the story, send in a picture if you have one, or a pencil drawing. We'll take care of the rest. But use the *Idea Exchange*.

▼

Visible—

Few laymen know the technical names for the gadgets used in electricity—sockets, fuses, switches, cords, plugs, etc. W. V. Pittman borrowed an idea from the hardware men, dressed it up to fit his new store, the Electric Supply Co., of Riverside, Calif. Display cases, inside which are adjustable shelves for stock, have doors mounted at an angle which keeps them shut. On the outside of the door the "gadgets" are strapped. Visible, all varieties side by side, so those who cannot name their appliance or fitting can always point, saying, "Give me one of these ————."

If you don't see what you want . . .

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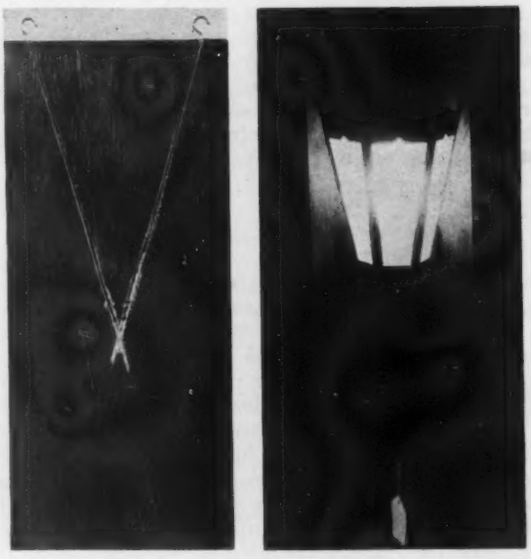
Live Hooks—

"How does it look when lighted?" is easily answered when a bracket type of fixture is mounted on a board as this one devised by John Flynn, of Flynn's Electric Co., Santa Barbara, Calif. The lamp in the fixture is connected along the back of the board to two hooks at the top. In ordinary display the board is hung from hooks along the display room wall. When the customer wants to see how it looks when lighted, the board is taken to "live hooks" wired to a 110-volt circuit and controlled by a switch. Merely hanging the board on these hooks lights the fixture for demonstration.



Hook up for this

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Little Child Shall Lead Them—

A bright sewing machine salesman down south introduced a new note that ought to work on ranges, ironers, kitchen mixers or dishwashers just as it has on electric sewing machines. He concentrated his salesmanship on the little girl of the family, only eight years old. "Here," said he, "wouldn't you like to make some pretty doll clothes, right now? Have you a little scrap of cloth you've been playing with? Fine. Now sit right down here, and run this machine. You can't hurt it and it can't hurt you. You want some ruffles? Sure! And look, you can sew right through matches and cigar boxes and everything, so Mother needn't be afraid of letting you sew on her new machine." Where mystery or seeming mechanical difficulty appears to be an obstacle, get a child to demonstrate how simple it is to operate the appliance.

Phoning for Prospects—

When the D. Z. Phillips Music Co., Majestic refrigerator distributor of Pueblo, Colo., received its first carload of Majestics, it opened up a sales campaign which really got results.

First, advertising and publicity in the newspaper laid the ground work. Then when the carload arrived, five trucks, bearing the refrigerators and huge signs, paraded through the main streets of the town to the company's warehouse.

Most interesting, however, is the new phone campaign which was instituted. Each morning 100 names are selected from the phone directory. To these 100 people immediately goes direct-mail literature on the refrigerator. The following morning an operator contacts them by phone, making a complete record of the conversation. This record is then turned over to the salesman in that territory, and he calls in person. Nine salesmen work from house to house, following the leads obtained through the phone campaign.

So far this sales procedure is proving successful and has been the means of turning up a lot of prospects that otherwise might be overlooked.

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Handle Local Advertising—

No matter how much trouble it takes to convince the manufacturer of it, the People's Electric Co., Medford, Ore., insists on handling the local national advertising of the lines it handles in its attractive merchandise store. This allows the company to make a direct tie-in with this advertising in the way of special sales effort, window trim, and their own advertising. It also gives this dealer a contact with his local papers and strengthens his position in the community as an outlet for the appliance. Another feature of this store is its refrigerator and radio display room. In the winter the refrigerators are displayed up on the balcony and the radio sets on the main floor. In the summer the radios go up on the balcony and the refrigerators are brought down to the main floor. Both are attractive display spaces, but the seasonal appliance gets the best position.

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House Inside—

Next best thing to demonstrating appliances in the home is to build a home in the store and demonstrate the appliances there under home conditions. In some respects it is superior to home demonstration, thinks Ansel's Electric Shop, of Alameda, Calif., a bright little store on the main thoroughfare of that Bay city. The rear of the store has been arranged to represent a bungalow, roof, windows, awnings and all. This is divided into two rooms, one the kitchen, the other a dining room. The kitchen is equipped to demonstrate any appliance. The dining room is for purposes of demonstrating lighting fixtures, decorative effects, and to sample the results of the cooking demonstrations. Women's clubs, church clubs and other organizations are extended an invitation to use the little cottage for meetings, prepare their refreshments in the kitchen, and enjoy them in the dining room. They cannot enter the cottage without having seen a complete array of attractive ranges and appliances.

Above—Cottage at the rear of Ansel's Electric Shop in Alameda, in which are housed a complete kitchen and dining room. "Home demonstrations" are made in this homey atmosphere without leaving the store.

Below—It is summer, and the refrigerators are on display on the main floor while the radios are seen on the attractive balcony, at the People's Electric Store, Medford, Ore. This comfortable display room can be seen from the street windows and connects directly to the main store through the arched doorway seen at the left.

Valley Power Users Form Association

A new organization, known as the San Joaquin Valley Power Users' Assn., is in the process of formation in the San Joaquin Valley in California, with headquarters in Fresno. The purpose of the organization, as set forth in its constitution and by-laws "shall be to encourage better and more economical methods of securing power for agricultural purposes and make such investigations and studies that may be necessary to aid and assist the various districts in the San Joaquin Valley counties to obtain power at the lowest possible cost."

The territory covered by the association includes the counties of Stanislaus, Merced, Madera, Fresno, Kings, Tulare and Kern. Three directors are to be elected from each county, making a total directorate of 21. The organization has been completed in Kings County and three directors have been chosen. They are Harry Glenn, Corcoran; Roy Newton, Stratford; and S. E. Railsbach, Hanford.

This movement to effect organization of the power users in the San Joaquin Valley is regarded as the outgrowth of the recent agitation in that territory for a reduction in power rates. Upon complaint of the California Farm Bureau Federation and other bodies, and following an investigation instituted on its own motion, the California Railroad Commission on April 8 ordered a 20 per cent reduction in the power rates of the San Joaquin Light & Power Corp. to apply during the months of May, June, July and August. A further hearing on the rates of the company is to be held by the Railroad Commission in the fall, and it is believed that the power users are effecting an organization at this time with a view to presenting the agriculturists' case.

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Puget Sound Co.—Stone & Webster Contract Ended

In a letter addressed to the 18,000 residents of Washington who hold stock in his company, President J. Frank McLaughlin of the Puget Sound Power & Light Co., Seattle, has announced termination of the contract with Stone & Webster as executive managers of the power company, and a reorganization of the local company. He declares the charges are made to establish closer relationship with the patrons and stockholders, and to aid in stimulating industrial and agricultural development throughout the territory served.

President McLaughlin calls the attention of the stockholders to the fact that his company has more than 150,000 customers and that more than 18,000 residents of the state have invested in the company's stock. Under the new arrangement, authority for the management of the company's affairs is centered in the head offices in Seattle.

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W. W. P. Co. Reduces Rates in 134 Towns

Effective July 1 The Washington Water Power Co. will reduce commercial and residential lighting rates in 134 cities and towns which it serves, not including Spokane and Coeur d'Alene, Idaho. Between 25,000 and 30,000 consumers will be benefited by the reduction to the extent of approximately $150,000 annually, the company estimates.

Under the new uniform schedule all residential rates in the outside territory served by the company, with the exception of those charged in Coeur d'Alene, will be the same. Commercial customers only in Coeur d'Alene will benefit by the reduction. The old uniform suburban residential rate was 8c. per month for the first 34 kw.-hr. and 3c. for all additional. The new rate is 7c. for the first 32 kw.-hr. and 3c. for all additional, per month.

Frank T. Post, president of the company, announced the reduction at the annual meeting of the company on June 2.

P. G. & E. to Take Over Great Western Assets

Directors of the Great Western Power Co. of California have authorized proceedings for the liquidation of the company's affairs and the conveyance of its properties to the Pacific Gas and Electric Co., which now owns more than 98 per cent of its total outstanding stock.

The preferred stocks of the Great Western Power Co. at the close of 1930 were held by 10,651 investors. On June 1, 1931, the holdings of more than 10,000 of these had been converted into preferred stock of the Pacific Gas and Electric Co. in accordance with the offer made by the latter in January, 1931. This exchange offer was extended from April 30 to June 15, 1931, to give to the few remaining holders of Great Western stock a final opportunity to effect the suggested exchange. On the basis of current market quotations, the two shares of the Pacific Gas and Electric Co.'s 5½ per cent first preferred stock and the two shares of its 6 per cent first preferred stock exchangeable for each share of Great Western preferred have an aggregate value of about $108.

Aside from the simplification of the capital structure made possible by the the refunding operations conducted by the Pacific company since acquiring control will result in reducing from eleven to not more than three the number of outstanding bond issues of the Great Western and its subsidiaries. A year ago there were $51,431,000 of these bonds outstanding, of which more than $31,550,000 will have been retired by the close of the current year.

The transfer of the Great Western company's properties to the Pacific Gas and Electric Co. will probably be consummated within the next few months.

Substation at Hoover Dam Site

Power is about to be turned on at this substation built by the Southern Sierras Power Co. on the top of the canyon rim at the Hoover Dam site. With this power available work will commence on the two long tunnels on either side of the Colorado that will divert the water from the river while the dam is being constructed

License Applicants for Oregon Hydro Projects Fewer Under New Ruling

THE abrogation of the former small-fee schedule in connection with the filing of water power applications in Oregon is mainly responsible for the fact that but few new petitions for hydro-electric permits have been received by the Hydro-electric Commission so far during the current year, according to Charles Stricklin, secretary of the board.

Prior to the adoption of the 1931 water conservation act, preliminary power permits were obtainable in Oregon by the payment of fees as low as $5. Since the session of the last Legislature, however, the minimum filing fee for applications covering such permits is $50, and the amended laws also provide for the performance of greater obligations in connection with preliminary developments of projects.

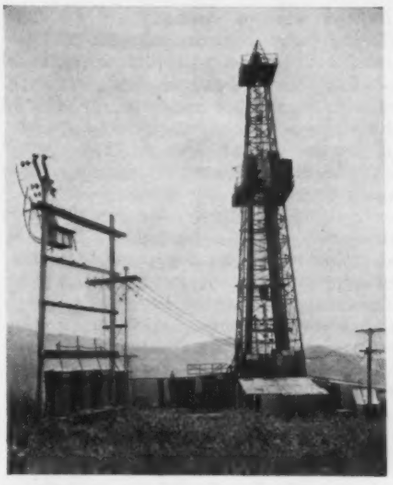
Several applicants for permits involving large developments who had sought licenses under the old statutes have filed requests with the state engineer for authority to transfer their applications from the offices of the Reclamation Commission to the Hydro-electric Commission. Among these is the Columbia River Power Co., of Seattle, which has asked for the transfer of its petition for authority to appropriate 90,000 sec.-ft. of water from the Columbia River at Stevenson, Wash., for the development of 235,000 hp.; estimated cost, $15,000,000. The commission is also requested to assume the responsibility of the final review of applications filed by the engineering firm of O'Neil & Callahan, of San Francisco, involving the appropriation of 650 sec.-ft. of water from the Santiam River for the development of 7,756 hp.; estimated cost, $800,000. Transfer is sought of the application of A. L. Houghtaling, of Portland, who desires to appropriate 40 sec.-ft. of water from Rock Creek for the development of 3,432 hp.; estimated cost, $150,000. Charles H. Lee and R. W. Myers, of Oakland, Calif., have petitioned the commission to assume charge of applications filed by them on the Illinois and Rogue Rivers for the following proposed developments: construction of a reservoir at Kerby, Josephine County, for the storage of 430,000 acre-ft. of water from the Illinois River, and the appropriation of 1,500 sec.-ft. of such stored water for the development of 113,600 hp.; appropriation of 18,250 sec.-ft. of water from the Rogue River and a permit to store 80,000 acre-ft. from the same stream for the development of 290,000 hp. Another transfer of applications to the commission involves the J. G. Kelly holdings on the North Santiam River and at Marion Lake. This applicant asks permission to withdraw from river and lake 760 sec.-ft. of water for the development of approximately 69,590 hp.

Twenty-five applications for water power permits which the holders failed to have transferred from the office of the state engineer and the Reclamation Commission have been canceled by the Hydro-electric Commission. The 1931 water control act provides that application filings made under the old water code shall be referred to the commission for transfer within a period of 60 days following the date upon which the act became effective, and that failure to negotiate such transfer renders the applications invalid for the purpose for which they were originally filed.

Among the applications thus invalidated by the commission, acting upon advices from the state attorney general, were five which had been filed by The California Oregon Power Co. involving the proposed appropriation of water from Klamath River for the development of power. Under the ruling of the attorney general it is now mandatory on the part of the state to refund all fees paid for filing and recording the canceled applications.

The fact that the securing of water power permits from this state has been rendered more difficult and expensive under the revised statutes, has had the natural tendency, in the opinion of Mr. Stricklin, to discourage the efforts of speculators to gain water power concessions and, consequently, permits are now less in demand by those who previously desired them for purposes other than actual or immediate development.

World's Deepest Hole?



REPUTED to be the deepest ever made by man, the Hobson A-2 well of the Chanslor-Canfield Midway Oil Company in the Sea Cliff field near Ventura, Calif., was drilled electrically to a depth of 10,030 ft. on May 18. Preparations are under way to put the well on production test in oil sand struck at this depth. At the left of the derrick may be seen the substation on the Southern California Edison Company's line that furnishes power for the drilling operations.

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Oregon Grange Moves for State Power Development

A movement to put the state of Oregon into the power business was initiated June 11 by the Oregon State Grange, meeting at Medford, through the adoption of a resolution authorizing the Grange executive committee to draft an amendment to the State Constitution empowering the state to develop hydro-electric power. The resolution was introduced by Kenneth Harlan of Carey & Harlan, Portland rate engineers, with the statement that it was designed to carry out the public ownership policies of the late George Joseph, recent gubernatorial candidate, and of Governor Julius Meier, elected on the Joseph platform.

The amendment, a draft of which is said to have been commenced by the Grange executive committee, is expected to empower the state to construct generating plants and transmission lines; and to wholesale power to private corporations and publicly owned utility districts and municipalities. The amendment is to be prepared in time to be initiated at the next general election.

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Cities Upheld in Sale Of Surplus Power

Municipalities manufacturing electricity may dispose of any "surplus power" outside their corporate limits and should not be restrained from making contracts with other municipalities for buying such surplus.

This opinion, handed down last month in Tacoma by Superior Judge W. C. Chapman of Pierce County in a friendly test suit brought by the Bremerton Municipal League, places legal approval upon a practice which has been carried on by cities having power to sell for years under a kind of "gentleman's agreement" with privately owned companies. The case will now go to the Supreme Court at Olympia for a final decision.

While the legality of this practice has always been questioned, this is the first time the issue was raised in court. Seattle has "traded" or "exchanged" surplus power with Tacoma for several years.

Defendants in the action included Seattle, Tacoma, Centralia, Puyallup and Bremerton. The Municipal League challenged the right of Bremerton to buy power from Tacoma and complained that until such question had been passed upon by the courts of the state, Bremerton could not dispose of its municipal utility bonds.

Coast Counties Company Completes All-Spanish Building at Watsonville

RIGHTLY termed one of the most beautiful modern commercial buildings in this section of the country, the new district office of the Coast Counties Gas & Electric Co., opened last month at Watsonville, Calif., is a credit to the company and to the architect who designed it, Albert Roller of San Francisco.

Every detail of the building has been carried out to conform with its Spanish design. At night the building presents a brilliant spectacle with 20 kw. in floodlighting trained upon it. Looming out of the darkness, it can be seen for a distance of more than 20 miles. Ten lights are hidden in the shrubbery along the driveway, seven units are erected on a tall pole diagonally across the street from the building, one unit on the roof of a neighboring filling station, four units on the south side of an adjoining building, and three on the back slope of the roof, two of which shine on the tower over the display lobby and the third lighting the rock garden and parking space in the rear of the building.

The merchandise display floor, 42 ft. long and 30 ft. wide, has a ceiling and floor made entirely of concrete. A rustic effect is supplied by two large beams extending the width of the room. These beams are of concrete but have been cleverly painted to represent heavy timbers, and the entire ceiling has been hand painted with a Spanish design. The floor has been squared and painted to represent red tile. At the south end of the display floor is a large open fireplace with a Spanish plaque on the chimney space.

Two large display windows, directly off the merchandise display floor, are lighted with a capacity of 6.4 kw. Three large interior floodlights are used to play upon appliances on the display floor. Convenience outlets with a total connected capacity of 40 kw. have been placed at various points about the display floor so that heavy-duty equipment may be demonstrated from practically any point.

Opening directly off the display floor are two model kitchens. One is equipped with gas appliances and the other with modern electric appliances. The automatic water heaters in these two kitchens furnish hot water for the entire building. In the model electric kitchen are also an electric ironer, refrigerator, dishwasher installed in the sink, and an electric range with automatic clock control and egg cooker.

In the rear of the building is an employee's meeting room with kitchenette adjoining.

The Standard Management and Operating Corp. of San Francisco, in charge of the design and construction of the building, has estimated its cost at $60,000. William Radtke was the contractor-builder.

Left—View from left entrance showing merchandise display room and display lobby. Model electric kitchen is through doorway at left. District manager's office is behind counter and fence at rear

Below—Night view showing floodlighting on front and side of building. Note two main display windows, and small appliance display window close to entrance

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Utah Company Sues for Removal of Idaho Tax

Suit has been filed in the federal court in Boise, Idaho, by the Utah Power & Light Co. for an injunction to prevent collection of the tax of one-half mill per kilowatt-hour on all electric power generated for sale in the State of Idaho. The tax was embodied in a law passed by the last session of the Idaho Legislature. (See ELECTRICAL WEST, April 1, 1931, p. 206.)

The suit, which names Emmitt Pfost, commissioner of law enforcement, and Attorney General Fred Babcock, as defendants, attacks the constitutionality of the act and of the call of Governor C. Ben Ross for the special session of the Legislature which enacted the law, and asks for an interlocutory injunction and hearing before three federal judges at an early date.

The law is unconstitutional, the suit states, in that it (1) interferes with interstate commerce by taxing a commodity which goes instantly into interstate commerce when generated: (2) deprives the company of the right to equal protection of the law through assessing a special tax upon it; and (3) provides a tax for one special group when it requires the company generating the power to return to irrigators and drainage users all the tax that has been collected on the power used by them in pumping projects. Moreover, it is assailed as a double tax in that the company is already paying a license tax, a property tax, and is made subject to an income tax soon to go into effect.

Levying of the tax would cost the power company approximately $120,000 a year, the suit states, while very little of the power generated is used in Idaho, most of it going to Utah.

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WINSTON BROS. Co.'s claim for extra compensation for building the Diablo Dam of the Skagit power project for the City of Seattle has finally been settled by the city council for the sum of $298,941.95. This will bring the total cost of the dam to approximately $4,873,437, including about $900,000 spent for engineering costs, machinery and other miscellaneous expense entirely outside the construction contract. The city has agreed to withdraw its counter claim against the contractors for failure to complete the dam within the specified time.

8-Cent Electric Rate to Apply at Boulder City

A schedule of rates for the sale of electrical energy at Boulder City, Nev., during the period of construction of the Hoover Dam project has been worked out by the chief engineer of the Bureau of Reclamation. The proposed schedules follow:

SCHEDULE "A"

Domestic lighting, heating, cooking and appliance service. Available for domestic use in residences, flats and individual apartments:
First 25 kw.-hr. per month, 8c.
Next 50 kw.-hr. per month, 4c.
Next 150 kw.-hr. per month, 3c.
All additional kw.-hr. per month, 2c.
Minimum charge per month, $2.
Ten per cent is to be added if bill is not paid when due. Schedule "A" does not apply to hotels and rooming houses. Single phase motors of 3 hp. or less will be permitted under this schedule.

SCHEDULE "B"

Commercial lighting and appliance service available for lighting, heating and incidental small power use in hotels, rooming houses, churches, halls, schools, public buildings, stores and other places of business:
First 50 kw.-hr. per month, 8c.
Next 250 kw.-hr. per month, 6c.
Next 1,800 kw.-hr. per month, 4c.
All additional kw.-hr. per month, 2c.
Minimum charge per month, $2.
Ten per cent to be added if not paid when due. Single-phase service only is supplied under schedule "B."

SCHEDULE "C"

Industrial power service:
(a) Demand charge per kilowatt of connected load per month, $2.50 plus.
(b) Energy charge per kilowatt-hour used, 1.5c.
Ten per cent to be added if not paid when due. Minimum charge shall be the demand charge. The total monthly bill shall be the sum of the demand charge and energy charge. The demand charge shall be on the connected load basis or on the 15-min. maximum demand basis at the option of the government, provided that the demand charge shall not be less than 40 per cent of the total connected load times $2.50.

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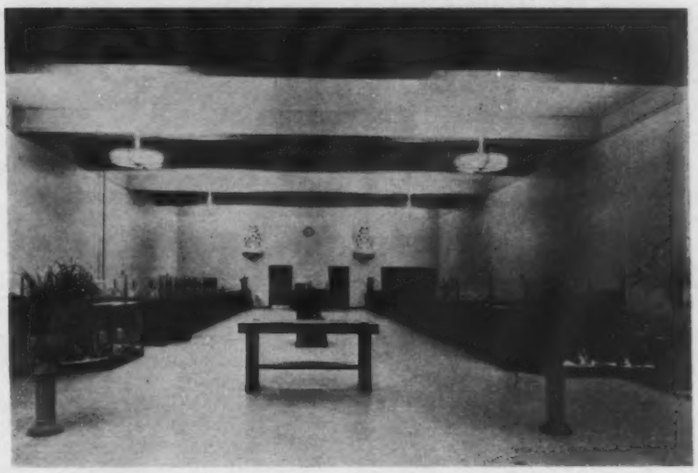
Regulation for Oregon's Publicly Owned Utilities

There became effective in Oregon on June 6 a law passed by the last Legislature which places municipally-owned and operated electric utilities within the jurisdiction of statutory regulation for the first and only time in the annals of that state.

The act provides that municipalities owning and operating electric light and power systems shall, before January of each year, prescribe rates and charges which will return sufficient revenue to meet all expenses of operation, additions and extensions, and provide for the funds necessary for the payment of interest and maturing principal on all outstanding bonds issued for or in connection with the utility. The law further provides that the proceeds of bonds issued for utility financing shall be used by the municipalities for no other purposes.

Another law recently placed in effect in Oregon authorizes governing bodies of incorporated cities and towns to levy and collect a privilege tax on privately owned utilities operating without a franchise, and limiting the duration of municipal franchises to the period of twenty years.

Edison Co. in New Long Beach Building



NEW commercial offices of the Long Beach division of the Southern California Edison Co. Ltd., at 133 East Third St., in the center of the downtown business district, were occupied by William P. Graef, division manager, and his commercial staff June 8. The company's Long Beach office for the past seven years had been at 535 Pine Ave. The new Edison building, erected at a cost of approximately $65,000, is completely electrically equipped and serviced. It is a two-story structure with mezzanine and basement. The executive offices, investment, service, sales and collection departments are on the main floor, which is arranged to give ample room for the display of electrical merchandise and for the convenience of customers, as shown by the view above.

The second floor is occupied by the accounting department, the main room providing desk space for a personnel of forty. Ceiling, walls and skylight wells of this room are finished with acoustic plaster to absorb operating sounds of the necessary machines. A portion of this floor is given over to an assembly room, designed for future use as a demonstration room with a model electric kitchen. Mezzanine floor offices provide accommodations for the desks of power and lighting specialists, meter readers and mailing department employees. Basement space is utilized for stock and storage rooms.

Window display space of approximately 50 ft. is provided in the new offices. The entire display space available on the main floor, including the window space, is about 2,500 sq. ft.

Finish throughout the building is Philippine mahogany; the floor of the main lower-story offices is of black and white terrazzo with black marble base. Walnut finish furniture is used on the main floor.

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Rate Cut Demanded by Oregon Commissioner

Reduction in residential and commercial lighting schedules of the Pacific Power & Light Co. in Oregon having the effect of reducing the company's revenues from these sources about 10 per cent, has been ordered by Charles M. Thomas, public utilities commissioner of the state. Coincidentally the company filed similar reductions in these schedules in its Washington territory. These reductions amount to about $95,000 in Oregon and $135,000 in Washington.

In general, the medium user of service is affected most advantageously since the reductions were made largely in the top block. Top rates of 8c. were reduced to 7c.; 10c. to 8½c.; 12c. to 9c..; and 15c. to 10c. At the same time some readjustment was made in the length of the blocks, the general effect being to unify the rate structure in the different parts of the company's territory though the rates themselves vary with variations in the cost of service and other rate making factors. The room count to determine the demand and other load factor features of certain of the rates in Washington have been removed, as have prompt payment discounts.

The Oregon commissioner set the bare physical value of the Oregon properties of the company at $9,003,027 based on previous studies of the commission engineers and the company's records.

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UNLICENSED ENGINEER CONVICTED IN OREGON—The first criminal conviction for violation of the Engineers' Registration Law in the state of Oregon, was secured in Multnomah County on May 14, when Andra MacLean of Portland withdrew a plea of not guilty and entered a plea of guilty to the crime of practicing engineering without a license. A fine of $25 was imposed by the court, leniency having been extended because of the changed plea. Mr. MacLean had been previously indicted by the Grand Jury of Multnomah County in March, 1931. The conviction is expected to remove any doubt in the minds of the public and engineers as to the effectiveness of the new law.

Utility Asks Change of Ruling in Pit River Case

A petition has been filed by the Mt. Shasta Power Corp., a subsidiary of the Pacific Gas and Electric Co., with the appellate court of Shasta County, Calif., asking for a modification of the decision recently rendered by that court in litigation over water rights in the Pit River country.

The decision referred to was handed down by the appellate court in what are known as the Crum and Albaugh cases, and it reversed the decisions rendered by the superior court of Shasta County in these two cases.

Nine suits were filed by farmers with land on Fall River who maintained that when the power company took the water out of that river in operating its Pit River power plants, it had illegally diverted the water and had damaged the farmers' land riparian to the Fall River. The Fall River flows into the Pit River, which is a very small stream until it is joined by the waters of the Fall River. The farmers sued the power company for damages and asked for an injunction restraining it from further appropriation of water. The superior court ruled in each case in favor of the plaintiff and awarded damages.

The power company appealed, and the appellate court decided that the damages named were excessive and that in fact the damage to the land was only nominal, and sent the case back to the superior court with instructions to enter judgment for nominal damages. However, the appellate court held that the power company was invading the rights of Messrs. Crum and Albaugh when it took the water out of Fall River, and at the same time it held that the company was exercising its riparian right.

The power company has taken the position that the ruling is inconsistent in that if it were exercising a riparian right it could not then be liable for damages, and has asked either for a modification of the ruling or a rehearing of the case.

The attorney for Albaugh and Crum also has asked the appellate court for a rehearing as the preliminary to his carrying the case to the State Supreme Court in an attempt to secure a reversal of the appellate court's decision.

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EUGENE, ORE., REDUCES ELECTRIC RATES—A reduction in all schedules of electric rates of the municipal power department of the city of Eugene, Ore., has been announced by C. A. McClain, superintendent of the water board of that city. Domestic rates are reduced an estimated 13 per cent; commercial lighting rates and power tariffs approximately 9 per cent. The savings to the customers, based on present use, is estimated at $60,000 per year.

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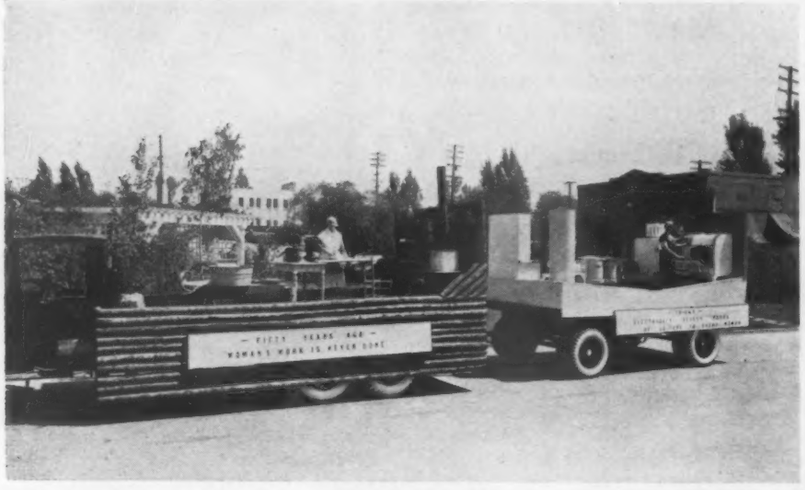
A Fifty-Year Change in the Kitchen



KITCHEN scenes old and new were displayed by the Southern California Edison Co. Ltd. as its entry in a Pageant of Progress parade held recently when Alhambra, Calif., celebrated the fiftieth anniversary of its founding. Miss Lilla Wheeler, bookkeeper in the Alhambra district office of the company, was the housewife in the kitchen of fifty years ago, with its wood cook stove and coal oil lamps. Mrs. Elinore Heck, of the Alhambra district sales staff, played the role of housewife in the all-electric kitchen.

The Edison entry was sponsored by A. I. Whitehead, Alhambra district manager, and W. J. McCullough, general storekeeper. Mr. McCullough is a member of the board of directors of the Alhambra Chamber of Commerce, which directed many details of the pageant. The parade float was designed by C. C. Castle, general foreman at the Edison company general store, assisted by L. M. Clayberger, director of the company's display department.

Oregon Commission O.K.'s Promotional Rates

Oregon's regulatory commission has committed itself to the practice of encouraging electric utility operators in the matter of adopting a so-called "promotional" type of rate structure calculated to result in additional patronage and increase the volume of business of the respective operators in that state.

In a final order entered by the commission which reduced the service rates of the Eastern Oregon Light & Power Co. 10 per cent, the utility is advised that "with the application of the promotional type of rate structure and the extension of energy-using appliances in the house, the revenue will ultimately increase and the consuming public will obtain in an increasing degree more electric energy for less money." The order further states that "it is the opinion of the commission that it is not only in the interest of the public but also of benefit to the utility that a reduction should be made in the rates and charges of the operator."

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Boulder Dam Power Will Be Expensive for San Diego

San Diego, Calif., is wondering if its 90,000,000 kw.-hr. allotment of Boulder Dam power is not really a "white elephant." W. F. Raber, vice-president and general manager, San Diego Consolidated Gas & Electric Co., in refusing to act as agent in bringing the energy to the city, says it is, declaring that electric power could be generated locally more economically by steam, even should the government reduce its estimated charges 50 per cent.

In this he agrees with Nelson Eckart, City of San Francisco engineer, who submitted an estimate of the cost of bringing in the power at more than $4,400,000, and stated that only if the city sold its allotment to private interests or engaged in municipal distribution of electricity would Boulder power be economically feasible.

The Metropolitan Water Board of southern California had previously refused to act as agents.

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AGRICULTURAL DEPARTMENT CREATED BY PEPCO—Formation of a rural electric service department by the Portland General Electric Co., Portland, under the direction of L. C. Moore, agricultural engineer, has been completed. Under the new department, each division and district office has specially trained men devoting their time to assisting farmers to make profitable use of electricty on the farm. The rural representatives do not merchandise farm equipment but act in an advisory capacity only on agricultural and electrical problems. The company now has 1,700 miles of rural line serving more than 7,500 farms, principally in the vicinity of Portland and Salem.

Los Angeles Power Board Disclaims Defense League

Arthur Strasburger, president of the board of water and power commissioners of Los Angeles, has addressed the following statement concerning the Municipal Light and Power Defense League (see ELECTRICAL WEST, Jan. 1, 1931, p. 39) to the citizens of Los Angeles:

"It has come to our attention that many persons have been led to believe that the Municipal Light and Power Defense League is sanctioned by the Department of Water and Power. This is an entirely erroneous assumption.

"The Municipal Light and Power Defense League has absolutely no connection, official or unofficial, with the Department of Water and Power, and has no authority to speak for or on behalf of that department.

"We have been informed that the Municipal Light and Power Defense League has solicited funds for its operation, has entered into political discussions, has endorsed candidates for office, and issued bulletins which are misleading to the public.

"Neither the Municipal Light and Power Defense League nor the Municipal League has any connection with the Department of Water and Power, its operations, policies or business.

"This notice to the citizens of Los Angeles is issued to clarify a confusing situation that has arisen by virtue of the misleading names used by the Municipal Light and Power Defense League.

"Friends of the Department of Water and Power are urged not to contribute any funds to the Municipal Light and Power Defense League under the conception that such contribution or membership is either authorized or approved by the Department of Water and Power or the Board of Water and Power Commissioners.

"The Department of Water and Power is capably managed and entirely able to conduct its affairs without the assistance of any league or 'defense' organization."

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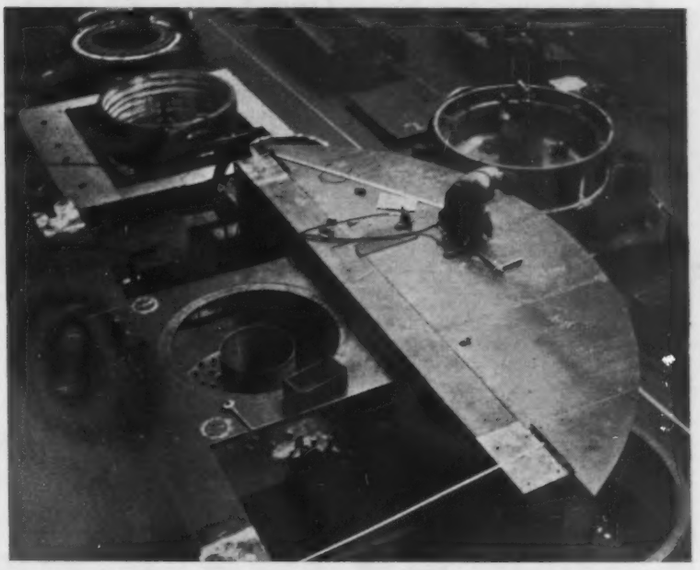
Eugene Steam Stand-by Plant Ready for Use

The new municipal steam stand-by plant at Eugene, Ore., was completed ready for service and tested during the first week in June. The plant, which is to serve for break-down service only, taking the place of a stand-by agreement with the Mountain States Power Co., Albany, contains a 1,413-hp. Erie boiler to operate at 250-lb. pressure and 200-deg. superheat, and a 6,000-kw., 11,000-volt, G. E. turbo-generator. Oil will be used for fuel. The building is of concrete with a temporary tile wall in one end to provide for possible future extension. The plant cost approximately $370,000. It was designed by Stevens & Koon, consulting engineers, Portland.

G. E. Building Rock Island Generators



Assembly of a thrust bearing support for one of the four 16,667-kva. overhung hydro-electric generators being built at the Schenectady Works of the General Electric Company for the Washington Electric Co.'s Rock Island project

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City Rate for Yamhill Electric's Farm Customers

Application of the urban domestic rate to the rural customers of the Yamhill Electric Co., Newberg, Ore., a subsidiary of Portland General Electric Co., Portland, has been ordered by the public utilities commissioner of Oregon. The former rural rate had a top step of 10c., while the top step of the urban rate is 8c., so that all rural customers of the company are affected.

A readjustment of the rural rate in the territory of the Portland General Electric Co. was effected last month. This readjustment permits the use of farm electrical equipment at the domestic rate up to the capacity of a 5-kw. transformer.

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Rights of Utility Upheld By Oregon Supreme Court

Rights of a public utility to operate exclusively in a given field, whether such rights are acquired by original occupation or by guarantee embodied in a certificate of convenience and necessity, constitute vested privileges to the extent of being tangible in character and not subject to confiscation or injury without due compensation. This decision was rendered by the Oregon Supreme Court last month in the case of Gold Beach Electric Co. vs. Gold Beach Utilities, Inc., wherein the former sued the latter for $4,000 damages for unlawful invasion of its territory. A lower court had awarded the plaintiff $2,000, but the higher court reversed this part of the decision on a technicality.

Precedent-establishing, the decision is virile because the State Legislature this year repealed the certificate of convenience and necessity law. However, the verdict establishes the validity of claims for damages resulting from violations of that law prior to its repeal.

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Seattle Company Starting Work on Alaska Project

Construction will be started immediately by the Portland Canal Power Co., of Seattle, on its hydro-electric power project in southeastern Alaska, according to Willis T. Batcheller, president. An engineering and surveying crew numbering 25 men will be sent to the job, and officers of the company say that plans for the project, license for which was granted by the Federal Power Commission in April (ELECTRICAL WEST, May 1, 1931, p. 263), will be completed and bids called for early in July.

Initial work will consist of the main and diversion tunnels. The main bore, with a diameter of 16 ft., will be 1,600 ft. long and will be concrete lined. The diversion tunnel, 600 ft. long and 1 ft. in diameter, will be unlined. A penstock, 500 ft. long with a 10-ft. opening at the upper end, tapering to 8 ft. at the lower end, with two 6-ft. branches running to the two turbines, is planned. The plant will generate 10,000 hp. upon completion, it is planned, and will have an ultimate capacity of 40,000 hp.

Revenues of California Companies Compared for Past Two Years

GROSS and net operating revenues of the major electric utility companies serving the state of California are compared for two years past in the following table. The figures have been obtained by ELECTRICAL WEST from the annual reports of the companies as submitted to the California Railroad Commission. The net operating income figure is arrived at after deduction of taxes, uncollectible bills, etc., from the net operating revenue figure.

	Gross Operating Revenue		Net Operating Income	
	1930	1929	1930	1929
Pacific Gas and Electric Co.	$61,990,826.67	$63,850,929.29	$26,051,620.62	$26,727,455.27
Southern California Edison Co. Ltd.	40,429,092.07	39,733,980.13	22,383,007.08	21,613,430.92
Los Angeles Gas and Electric Corp. (12 mos. ending March 1931 and 1930)	23,922,947.34	23,660,250.11	10,778,429.31	10,890,683.25
San Joaquin Light & Power Corp.	12,523,839.57	11,336,743.66	6,724,398.39	6,449,621.07
San Diego Consolidated Gas & Electric Co.	7,397,939.00	7,322,176.00	3,706,745.00	3,519,673.00
The Southern Sierras Power Co.	4,183,639.98	4,154,986.09	1,958,177.24	1,873,194.85
Coast Counties Gas & Electric Co.	2,179,905.09	2,145,860.45	551,633.15	550,086.80
Vallejo Electric Light & Power Co.	299,539.33	289,402.23	81,869.52	90,501.79

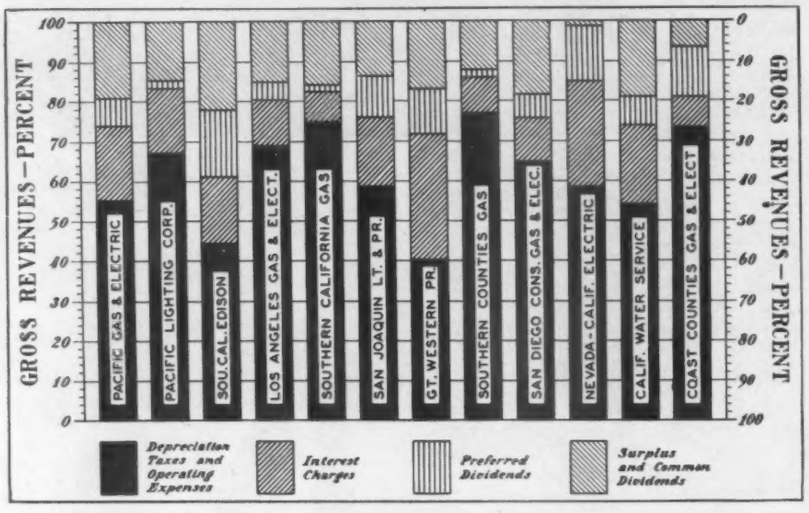

Chart prepared by Dean Witter & Co. showing disposition of 1930 total revenues and indicating the margin of safety of the major California utilities' securities

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Plan Sought for Financing L. A. Power Department

Los Angeles' Board of Water and Power Commissioners has authorized its president, Arthur Strasburger, to negotiate with private persons or concerns for a financial plan which would obviate a bond issue for constructing an 80,000-hp. steam station and a transmission line from Boulder Dam. It is Mr. Strasburger's desire to make it unnecessary ever again to call upon the taxpayers for assistance.

Studies on the steam plant, the city's first, and a 20,500-hp. addition to its hydro system, are now being made.

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NEW SEATTLE CITY LIGHT BOND ISSUE ANTICIPATED—The Seattle City Council has under consideration a resolution providing for the sale of an additional $2,000,000 worth of City Light bonds to finance purchases and construction connected with development on the Skagit River and at Seattle power stations.

El Paso Utility Rates Being Investigated

Believing that the "general decline in commodity prices and production costs is not adequately reflected in local utility rates," the city council of El Paso, Texas, has hired Burns & McDonnell, of Kansas City, rate experts and consulting engineers, "to make a complete investigation of the gas and electric rates, including engineering, appraisal and accounting, the same to be predicated upon the basis of substantiating a rate ordinance before the courts if necessary." The quotations are from an announcement of R. E. Sherman, mayor of El Paso, which is served by the El Paso Electric Co. and the Texas Cities Gas Co.

Investigation of the electric rates is already under way, and a study of the gas rates is expected to start after July 1. Reports are to be submitted Oct. 1 of this year. Each investigation will cost $8,500. Telephone rates also are to be investigated.

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Judge Overrules Jury in Injured Boy's Case

Declaring that The Washington Water Power Co. had sufficiently safeguarded its Rockwood substation on South Arthur St. in Spokane, Judge Fred Witt, in the superior court, has set aside a verdict of $4,500 damages which was awarded Ralph Hanson, Jr., by a jury in that court last month.

Dr. Ralph Hanson brought suit against The Washington Water Power Co. for $30,000 damages on acount of injuries sustained by his ten-year-old son last summer when the boy came in contact with a 13-kv. wire at the substation. The Hanson youth, with other boys, was engaged in a rock fight and climbed to the roof of the substation building to gain a vantage point. His head came in contact with the 13-kv. line and his scalp was burned.

At the first trial, the jury in Judge Witt's court brought in a unanimous verdict for the plaintiff for $4,500 damages. In his instructions to the jury at that time Judge Witt pointed out that 13,000 volts of electricity must be guarded by the highest degree of protection but that the law did not require impossibilities. Before the trial, Judge Witt had refused to sustain the company's demurrer which declared that the boy climbed over a high fence and up a pole before he was injured and that he was guilty of contributory negligence.

Following the jury verdict, The Washington Water Power Co. through its attorney asked Judge Witt to set aside the verdict on the grounds that there was no legal justification for it and further asked that, if this motion be denied, a new trial be granted.

Judge Witt then ruled that the company had properly safe-guarded its substation and that the boy cannot recover damages for his injury, setting aside the $4,500 verdict. Judge Witt said in his opinion that the statute did not require impossibilities and that if the company had taken the proper safeguards there could be no recovery for damages. He said that it was his opinion the company had taken the proper safeguards to protect citizens and there was no negligence shown.

Publicly Owned Utilities Unite in California

To promote the interests and welfare of publicly owned gas and electric utilities, an organization recently has been formed in California under the name of the Publicly Owned Gas and Electric Utility Association of California. A constitution and by-laws have been adopted by the association, and the official personnel of the organization is as follows: President, B. W. Creim, electrical engineer, Modesto Irrigation District, Modesto; first vice-president, Peter Diederich, superintendent of plant and production, Glendale; second vice-president, F. R. Chilton, city clerk, Roseville; secretary-treasuser, J. H. McCambridge, general superintendent, Public Service Department, Burbank; board of directors, B. F. DeLanty, general manager, Light and Power Department, Pasadena; John A. Henning, superintendent of public utilities, Lodi; W. D. Tillotson, city attorney, Redding; J. B. Kahn, formerly superintendent, Alameda public utilities; and J. H. Byxbee, city engineer, Palo Alto. The four officers and five directors constitute the governing board of the association.

The membership of the association is composed of political subdivisions, cities, irrigation districts, utility districts, or any other California communities publicly engaged in the distribution of gas and/or electricity, according to the constitution.

Of the larger publicly owned utilities, the following are members: The Los Angeles Bureau of Power and Light, the Modesto Irrigation District, the Burbank Public Service Department, the Glendale Light and Water Department, and the Light and Water Departments of the cities of Pasadena, Riverside, Alameda, Palo Alto, Lompoc, Redding, and Roseville.

The object of the association, as set forth in its constitution, shall be the advancement of the fundamental and practical knowledge concerning the production, operation and distribution of gas and electricity, and the design, construction and management of such works in California, through the interchange, between members of the association and with others, of information, experience, and opinion relating thereto. Also, to provide ways and means of promoting favorable legislation and to combat unfavorable legislation. To provide a co-operative executive and legal force composed of the entire group of such distributing systems to assist any member or members in actions threatening their prospective existence. To assist any member or non-member municipality or district in acquiring information regarding the feasibility of their securing or establishing publicly owned gas and/or electrical utilities.

P. C. E. A.

Prizes Awarded in Essay Contest

A total of 1,747 utility employees competed this year for the 89 cash prizes offered in the essay contest conducted by the customer relations committee of the General Bureau of the Commerical Section, P.C.E.A., under the chairmanship of Lloyd Henley of the San Joaquin Light & Power Corp. This year's participation exceeded that of a year ago by 235 contestants. "The Electric Appliance—the Ideal Household Servant," was the title of the 1931 essays.

Seven power companies were represented in the contest. The following table gives the number of employees that competed in each company:

	No. of Essays
Tucson Gas, Electric Light & Power Co.	6
Southern California Edison Co. Ltd.	693
San Diego Consolidated Gas & Electric Co.	24
Pacific Gas and Electric Co.	149
Los Angeles Gas and Electric Corp.	837
The Southern Sierras Power Co.	22
San Joaquin Light and Power Corp.	16
Total	1,747

Prizes have been awarded as follows:

First ($100)—Roy W. Swift, Jr., transportation department, Los Angeles Gas and Electric Corp.

Second ($75)—Wm. C. F. West, Jr., statistician, Los Angeles Gas and Electric Corp.

Third ($50)—David S. Bromeley, The Southern Sierras Power Co., Brawley, Calif.

Fourth ($25)—H. W. Welton, Southern California Edison Co. Ltd., Pomona, Calif.

Next Ten Prizes—$15 Each

W. R. Chawner, So. Sierras Pwr. Co., Riverside
J. M. Stanley, collection department, L.A.G. and E. Corp.
Miss Ella I. Hoeft, advertising department, So. Cal. Ed. Co. Ltd.
Miss Eula Hedden, So. Cal. Ed. Co. Ltd., Redondo
C. C. Matson, electrical distribution department, L. A. G. and E. Corp.
Miss Edna Mae Kerr, collection department, L. A. G. and E. Corp.
Mrs. Fannie Loveless, new business department, L. A. G. and E. Corp.
Max E. Turner, gas distribution department, L. A. G. and E. Corp.
Mrs. Edith L. Hammond, billing department, S. J. L. & P. Corp., Fresno
F. W. Lovell, P. G. and E. Co., San Jose

Next Twenty-five Prizes—$10 Each

W. S. Fleming, So. Sierras Pwr. Co., Riverside
Miss Anne Glotzback, stenographic division, So. Cal. Ed. Co. Ltd.
Miss Mary Jarvis, investigation department, L. A. G. and E. Corp.
Miss Eleanor Jones, valuation department, So. Cal. Ed. Co. Ltd.
Ray A. Edwards, gas distribution department, San Diego Cons. G. and E. Co.
Miss Ruth Malloy, valuation department, So. Cal. Ed. Co. Ltd.
C. D. Wylie, Midland Counties Pub. Serv. Corp., Santa Maria, Calif.
James E. Euwer, electrical distribution department, L. A. G. and E. Corp.
H. M. Grimes, So. Cal. Ed. Co. Ltd., Fullerton
J. L. Fitch, So. Cal. Ed. Co. Ltd., Pasadena
L. W. Butler, investigation department, L. A. G. and E. Corp
Miss Wiebka Atkinson, collection department, San Diego Cons. G. & E. Co.
B. A. Miller, P. G. and E. Co., San Jose
Arthur Ebey, So. Cal. Ed. Co. Ltd., Vernon
Mrs. Lucile Gregson, So. Cal. Ed. Co. Ltd., N. Hollywood
Claude Lynch, So. Sierras Pwr. Co., Riverside
Louis Blattau, bookkeeping department, L. A. G. and E. Corp.
Volney C. Brown, So. Cal. Ed. Co. Ltd., Tulare
W. Weidemann, Midland Counties Pub. Serv. Corp., San Luis Obispo
Miss Bena M. Chaney, accounting department, San Diego Cons. G. & E. Co.
Miss Myrtle Loella Douglas, So. Cal. Ed. Co. Ltd., Montebello
C. B. Ashton, accounting department, L. A. G. and E. Corp.
G. E. Gowing, S. J. L. & P. Corp., Fresno
R. Jay Fischer, So. Cal. Ed. Co. Ltd., Pasadena
Miss Marie Lamb, P. G. and E. Co., Salinas

In addition, fifty prizes of $5 were awarded, the winners being selected by drawing.

A. I. E. E.

Program of A.I.E.E. Lake Tahoe Convention

Details of the program for the Pacific Coast convention of the American Institute of Electrical Engineers at Tahoe Tavern, Lake Tahoe, Calif., in August have been announced by A. W. Copley, Westinghouse Co., San Francisco, chairman of the general convention committee. Technical sessions will be held Aug. 25, 26, and 28. Some form of entertainment will be provided each evening, and there will be the usual golf tournament for the John B. Fisken cup.

The program follows:

Tuesday, Aug. 25

10:00 a.m. Session on industrial applications. L. F. Leurey presiding.
"Electricity in the Wood Products Industry," by Charles E. Carey and K. L. Howe of Seattle.
"Application of Electricity to Oil Field Operation," by H. C. Hill and J. B. Selegue of Los Angeles.
"Induction Motor Design," by V. Hoover of Pasadena.

2:00 p.m. Session on power transmission and distribution. S. J. Lisberger presiding.
"Economics of A.C. Networks for Secondary Distribution," by S. B. Clark of Portland.
"The Mokelumne River Development of the Pacific Gas and Electric Co.," by E. A. Crellin, E. M. Wright and B. D. Dexter of San Francisco.
"Tie Line Control of Interconnecting Networks," by C. A. Powel and T. C. Purcell of Pittsburgh.
"Tuned Power Lines," by H. H. Skilling of Stanford University.
Evening. Reception.

Wednesday, Aug. 26

9:30 a.m. Student technical session No. 1.

2:00 p.m. Session on communications, C. E. Fleager presiding.
"Intercontinental Telephone Service," by J. J. Pilliod of New York.
Pacific Coast Telephone Network," by E. M. Calderwood of San Francisco and D. F. Smith of Los Angeles.
"Electrical Solutions of Problems of Regular Scheduled Flight," by C. F. Green of Schenectady.
"Electrical Sound-Absorption Measurements," by A. L. Albert and W. R. Bullis of Corvallis.

6:00p.m. Barbecue dinner, followed by entertainment.

8:00 p.m. Address by C. E. Grunsky, president, American Engineering Council, on "Business Cycles and Some Economic Problems."

Thursday, Aug. 27

8:00 a.m. Student breakfast and conference.
Afternoon. Sports.
Evening. Banquet.

Friday, Aug. 28

9:30 a.m. Session on electrophysics and general subjects. Prof. R. W. Sorensen presiding.
"Cathode Drop in Arcs and Glow Discharges," by S. S. MacKeown of Pasadena.
"The Kindling of Electric Sparkover," by C. E. Magnusson of Seattle.
"Snow Surveys," by Prof. H. P. Boardman of Reno.
"Radio Coordination," by H. N. Kalb and C. C. Campbell of San Francisco.

2:00 p.m. Student technical session No. 2.
Evening. "A Night in Monterey."

Personals

Dr. Ryan Retires From Active Work at Stanford

WITH the commencement exercises of Stanford University held June 15, Dr. Harris J. Ryan, for the past 25 years head of that university's department of electrical engineering, terminated his teaching career and became emeritus professor of electrical engineering and honorary director of the High-Voltage Laboratory named in his honor.

His retirement from academic routine will leave Dr. Ryan free to devote his entire efforts to electrical research, which already has covered practically the entire field of electrical engineering from the development of direct-current machinery to high-voltage long-distance transmission. Long ago he adopted the principle that, while training the student, his researches should be of maximum value to the engineer in the field. The consistent application of this principle has had as one of its most practical results the founding of the Harris J. Ryan High-Voltage Laboratory, which Dr. Ryan considers the greatest satisfaction of his career. Not the least marked of Dr. Ryan's contributions to the development of electrical science is the work done by his associates and graduate students.

Among important papers which he has written, many of which have appeared in the Proceedings of the American Institute of Electrical Engineers, are the following: "Transformers," 1890; "On the Relation of the Air Gap and the Shape of the Poles to the Performance of Dynamo Machinery," 1891; "The Conductivity of the Atmosphere at High Voltages," 1904; and "A Power Diagram Indicator for High-tension Circuits," 1911.

For his contributions to the science and the art of high-tension transmission of power Dr. Ryan was awarded the Edison Medal for the year 1925.

Following his graduation from Cornell University in 1887 with the degree of M.E. in electrical engineering, Dr. Ryan spent a year in the employ of the Western Engineering Co. in Lincoln, Neb., and then returned to Cornell to become an instructor in charge of the Electrical Machinery Laboratory. From 1890 to 1895 he served as assistant professor of electrical engineering in provisional charge of the department; later he received a full professorship and was made head of the department. He held that position until 1905 when he left Cornell to accept the post from which he is now retiring. Dr. Ryan was born near Harrisburg, Pa., Jan. 8, 1866.

In Dr. Ryan's honor a dinner tendered by the alumni of the department of electrical engineering of Stanford University was held at the San Francisco Engineers' Club Friday evening June 19. Paul M. Downing, vice-president and general manager, Pacific Gas and Electric Co., acted as toastmaster.

DR. HARRIS J. RYAN

B. H. PARKINSON

W. H. McGRATH

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Heads Northwest Utilities' Customers' Department

BENJAMIN H. PARKINSON, for many years connected with the accounting department of the Northwestern Electric Co., Pacific Power & Light Co. and Portland Gas & Coke Co., Portland, has been promoted to the position of manager of the customers' department serving these three companies.

Mr. Parkinson was born in Seattle in 1898 and had his early schooling there and later successively at Denver, Colo., and Portland. After varied business affiliations and a sojourn in the army during the war as second lieutenant of Coast Artillery, he entered the employ of the Portland Gas & Coke Co. in August, 1919, in general accounting work. He soon became associated with the statistical and auditing departments of the gas company and the associated electric companies and more recently has been in charge of the installation of new accounting methods involving the application of machines. He has been active in the Accounting Sections of the Northwest Electric Light & Power Association and Pacific Coast Gas Association, serving in recent years as chairman of various committees of both, and as chairman of the Accounting Section of the latter for one term.

In his new post Mr. Parkinson succeeds William H. Barton who has been made general manager of the gas division of the Montana Power Co., distributing gas in ten cities in Montana with headquarters at Butte.

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A. G. KIESER, chief clerk of The Southern Sierras Power Co.'s treasury department in Riverside, Calif., has been appointed an assistant treasurer of that company and its associated companies. He has been an employee of the Southern Sierras company since Jan. 1, 1920.

W. H. McGrath Advanced By Puget Sound Co.

AN important development in the recent reorganization of the Puget Sound Power & Light Co. was the election of W. H. McGrath as executive vice-president of the company. The promotion of Mr. McGrath follows logically the termination of the Puget Sound company's contract with Stone & Webster as executive managers (announced elsewhere in this issue) and the placing of additional responsibility upon the company's own executives.

An old-time employee of Stone & Webster, Mr. McGrath's early career followed the usual course in his transfer from one to another of that company's properties throughout the country. Joining the head office at Boston in 1901 upon his graduation from Harvard, he proceeded after two years to the Houston County Electric Light and Street Railway Co. at Houghton, Mich., as engineer, later becoming superintendent, and finally manager. In 1909 he was transferred to Minneapolis, where he became assistant general manager of the Minneapolis General Electric Co., remaining there until 1912, when he returned for two years to the Boston office. In 1913 he became manager of the Stone & Webster organization in the state of Washington, later vice-president and manager, and finally was appointed to the position he now holds. He is also vice-president of the Puget Sound Power & Light Securities Co., and president of the Ice Delivery Co. He is a member of the American Institute of Electrical Engineers, the American Economic Society, and the Amercian Society of Political and Social Science.

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J. D. ROSS, recently ousted superintendent of the Seattle City Light Department, has been engaged as a consultant to the New York public power authority which is making a survey of the St. Lawrence River at a section known as the International Rapids, where it is planned to develop a $200,000,000 hydro-electric project to serve the province of Ontario on one side and New York State on the other. Mr. Ross's employment in this capacity is expected to occupy several weeks.

HARRY L. MASSER

H. J. GILLE

HARRY W. BROWN

Electric Club President Is Well Known Engineer

HARRY L. MASSER, whose election to the presidency of the Los Angeles Electric Club is announced elsewhere in this issue, is vice-president and executive engineer of the Los Angeles Gas and Electric Corp. and is well known throughout California as a power company engineer.

Mr. Masser entered the employ of the Los Angeles Gas and Electric Corp. in 1924 as gas engineer, his previous experience having been gained with the Southern California Gas Co., the Midwest Gas Co., as assistant naval inspector of ordnance with the U.S. Navy during the World War, and five years with the California Railroad Commission. His duties with the commission involved supervision of the service rendered by gas companies and the fixing of gas and electric rates for various California utilities. Because of his familiarity with natural gas conditions in the southern part of the state, Mr. Masser was appointed gas administrator in 1921.

In March, 1929, W. A. Baurhyte retired as president of the Los Angeles Gas and Electric Corp. and Addison B. Day was promoted to that position. As neither of the two remaining vice-presidents was experienced along engineering lines, Mr. Masser was advanced to the position of vice-president and executive engineer, having supervision over all gas and electric operations as well as other engineering and operating departments.

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HARRY ENGELBRECHT, a member of the engineering department of The Southern Sierras Power Co., Riverside, Calif., since the fall of 1926, has resigned to return to Sweden, his native land, where he has accepted the position of manager of an electric power company.

J. F. SPEASE, central station engineer in the San Francisco engineering department of the General Electric Co., is leaving for Portland July 1 to take charge of the company's engineering department in the Northwest territory.

H. J. Gille to Be New Development Specialist

H. J. GILLE, since 1913 general sales manager of the Puget Sound Power & Light Co., with headquarters in Seattle, has been named manager of that company's agricultural-industrial division. In making the announcement J. F. McLaughlin, president of the company, said: "Henry J. Gille has been released from his present duties as general sales manager of the company and in the future will devote his entire time to assisting the state and various community established organizations with their agricultural and industrial development.

"Mr. Gille, who is at the present time vice-president of the State Chamber of Commerce and chairman of the land settlement committee, has lived out in this territory for almost twenty years and . . . . has become conversant with the needs and requirements of industry and agriculture in this territory. Mr. Gille has been an aggressive pioneer in the electrification of industry and agriculture.

"In these days and times when throughout the United States there is such keen competition between states and communities for new residents, new industries and new capital progress can only be secured as a result of aggressive effort. The company feels that it has a very definite part to play in doing all in its power to foster this growth and development and is shaping its policies to this end."

Mr. Gille has won widespread recognition for his efforts in promoting the use of electricity in cooking, a work in which he was a pioneer. As the result of his thought and energy expended on this work, the Puget Sound system's range saturation is one of the highest in the United States. He has always taken a very active part in the affairs of the electrical industry, particularly the Northwest Electric Light and Power Assn., of which he is a past president. He is also a member of the American Institute of Electrical Engineers and of the National Electric Light Association, and is a past president of the Washington Manufacturers' Assn.

Prior to his taking up his residence in Seattle he had been sales manager from 1907 until 1913 in Minneapolis for the Minneapolis General Electric Co. He was born on a farm near St. Paul.

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Portland Club President Heads Jobbing Branch

HARRY W. BROWN, whose election as president of the Portland Electric Club was announced last month in ELECTRICAL WEST, has been manager of the Portland branch of the Electric Corporation since July, 1928. He was born in Alameda, Calif., in 1892 and on leaving school entered the employ of the Southern Pacific railroad at San Francisco. He broke into the electric jobbing business in 1925 when he became a salesman for Alexander & Lavenson, San Francisco. In 1927 he joined the San Francisco office of the Electric Corp. as manager of the radio department and was transferred the following year to Portland.

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GEORGE M. RICHARDSON, purchase engineer of the Southern California Edison Co. Ltd., was elected president of the National Assn. of Purchasing Agents at the June convention of the organization at Toronto, Canada. This is the first time that a Western man has been selected for the presidency of the association, which has a membership of more than 6,000. His election is taken as an indication that the 1932 convention will be held on the Pacific Coast.

GORDON MUIR, director of advertising and sales promotion for Holbrook, Merrill & Stetson, Los Angeles, manufacturers of electric refrigerators, recently left that company to assume an executive position in the East. Commenting on Mr. Muir's resignation, President Merrill of the Holbrook organization, said: "Our wishes for Mr. Muir in his new connection are mingled with regrets that he is leaving our company."

LEWIS A. MCARTHUR, vice-president and general manager, Pacific Power & Light Co., Portland, has just completed a "Eugene Area Soil Survey" for the federal government, and a similar survey of the Grande Ronde area in Union County, Ore. Mr. McArthur, an official government map maker, is now at work on soil surveys in Marion, Umatilla and Columbia Counties, and a report entitled "Oregon Tidal Benchmarks."

R. H. HALPENNY, electrical engineer, The Southern Sierras Power Co., Riverside, Calif., has been elected a member of the executive committee, Los Angeles Section, A.I.E.E.

FRANK LUCKING, formerly plant superintendent for The Southern Sierras Power Co. at Holtville, Calif., since 1928, has been made superintendent at Barstow for the company, succeeding Fred Goellner, resigned. Lloyd Loudon, for the past year and a half superintendent at Calipatria, has been appointed to succeed Mr. Lucking at Holtville. Wade Cook, member of the organization at Coachella, has been transferred to Calipatria to take the position formerly held by Mr. Loudon.

D. W. MONTGOMERY, a salesman for the Pacific Gas and Electric Co., has been transferred from the San Francisco division to the company's De Sabla division, and will have headquarters in Chico, Calif.

G. R. WRIGHT, of the Canadian General Electric Co., has been elected chairman of the Vancouver section of the American Institute of Electrical Engineers. Mr. Wright will also act as chairman of the general committee appointed to prepare for the Pacific Coast convention of the Institute in Vancouver in September, 1932.

CLAYBURN C. ELDER, chief hydrographic engineer of the Metropolitan Water District of southern California, described the Colorado River aqueduct project in an address entitled "Colorado River Water for Southern California Cities Through the Metropolitan Aqueduct" which he gave at a luncheon meeting of the Los Angeles Electric Club June 8.

Obituary

CHARLES HERMAN DICKEY, a director of the Pacific Gas and Electric Co., the Pacific Lighting Corp., and the Southern Counties Gas Co., and a second vice-president of the latter company, died at Del Monte, Calif., June 17, following a heart attack. He was an authority on public utility franchises and was the author of the book, "Obligations Imposed by the Possession of a Franchise."

FROST L. BENHAM, manager of the Upper Verde Public Utilities Co., Jerome, Ariz., died in that city June 16 as the result of injuries received in an automobile accident. He was a director of the Arizona Utilities Assn. and served as general chairman at the annual convention of that association held in Phoenix April 8-11.

E. J. O'NEIL, for the last two years a salesman for the Anaconda Wire & Cable Co. in the San Francisco territory, died in that city May 25. Prior to his affiliation with the Anaconda company he had been associated with the Kellogg Switchboard & Supply Co., and previous to that with Alexander & Lavenson, and also with the Western Electric Co.

Meetings

P.C.E.B. Calls Dealer-Power Company Meeting

Called by Frank J. Kiefer, northern regional manager of the Pacific Coast Electrical Bureau, a special meeting of all dealers and the sales force of the power company was held for the Coast Counties Gas & Electric Co.'s territory at Santa Cruz, Calif., June 12, 1931. Almost all the electrical dealers in this territory were present.

The speakers were K. I. Dazey, managing director of the Bureau and of the P.C.E.A.; Pierre Vinet, new business manager, Coast Counties Gas & Electric Co.; Elmer Cox, of Cox Electric Co., Santa Cruz; John Holt, Holt Electric Co., Santa Cruz; Douglas Hollenbeck, of the Hollenbeck Electric Co., Gilroy; and dealers from Hollister and Watsonville. From San Francisco, representing the California Electragists, were Edward Martin, president of the Northern Chapter, and William A. Cyr, secretary.

Mr. Dazey traced the history of the Bureau through its various previous organizations and outlined its present policy and purpose. He then described the various activities undertaken by the Bureau in promoting the Red Seal Plan, lighting, industrial electrification, agricultural electrification, and advertising. He also discussed the principles of merchandising as prepared by a special committee of the Bureau and adopted as a guide for power company-dealer cooperation.

Mr. Vinet outlined his company's policy very definitely as to merchandising and dealer cooperation. He stated that the Coast Counties company had always recommended a cooperative plan, tried to maintain ethical methods, and had sought only to stimulate the sale of appliances. This plan of operation was stated as strictly against price cutting. It notifies dealers of campaigns, makes special allowances known to dealers in campaigns, and when other appliances are featured arranges to sell these to dealers at cost, and will carry dealers' paper. It invites the dealer to use the sales floor and promises that no prospects shall be taken from dealers who bring them to its offices. For those appliances on which it has exclusive sales territory, it appoints subdealers. Its windows are available to dealers on holidays and at other times for display. Employees will not do wiring. It has a man specializing on illumination sales, which all go through dealers. On the matter of salesmen's compensation he spoke frankly and characterized the situation as one of correct training of man power, inviting dealers to attend employees' meetings to ascertain how they were being taught to respect dealers' appliance business.

Responses were made by dealers from various parts of the territory.

Edward Martin in outlining the purposes of the organization of the Electragists showed that a dealer organization could serve both the purposes of presenting the inarticulate dealer's opinion to the central station and other branches of the industry on matters concerning the dealer, and also be the focal point through which these other branches of the industry may carry their message and their plans, which may be beneficial to dealers, back to the dealer group.

After the Bureau meeting was adjourned, the contractor-dealers remained for an organization meeting with the Electragists and discussed many of the contractor problems in that territory. Edward Martin promised a large convention meeting in Watsonville in September. As the nucleus of an Electragist branch in this territory, John Holt was appointed chairman and A. Dufor, of Central Electric Co., Watsonville, secretary. Future meetings are contemplated.

Coming Events

American Institute of Electrical Engineers—Annual Pacific Coast Convention, Lake Tahoe, Calif., Aug. 25-28, 1931.

Camp Co-operation XI — At Association Island, Henderson Harbor, New York, July 27-31, 1931.

International Association of Electrical Inspectors, Northwest Section—Sixth annual convention at Salem, Ore., Oct. 5-7, 1931.

National Electric Light Association—Rocky Mountain Division — Annual convention at Stanley Hotel, Estes Park, Colo., Sept. 2-4, 1931.

National Electrical Wholesalers Association, Pacific Division—Thrice yearly meeting, Hotel Del Monte, Del Monte, Calif., Oct. 8-10, 1931.

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Los Angeles Electric Club Elects Year's Officers

Harry L. Masser, vice-president and executive engineer of the Los Angeles Gas and Electric Corp., has been elected president of the Los Angeles Electric Club for the 1931-32 year, succeeding E. F. Watkins, purchasing agent, Southern California Edison Co. Ltd. Mr. Masser was vice-president of the club during the past year.

Other officers elected are: first vice-president, A. E. Hitchner, Westinghouse Electric & Mfg. Co.; second vice-president, M. L. Stannard, Southern California Telephone Co.; third vice-president, C. Thornburn, Pacific Electric Railway Co.; secretary-treasurer, H. R. Olson, General Electric Supply Corp.; and sergeant-at-arms, Fred Garrison, General Electric Co.

The newly elected executive committee includes G. E. Arbogast, Newbery Electric Corp.; H. C. Goldrick, Graybar Electric Co., Inc.; Carl Buratti, Johns-Manville, Inc.; R. G. Kenyon, Southern California Edison Co. Ltd., and A. W. Elliott, Los Angeles Department of Water and Power.

Contractor Dealer Inspector

Presidents, respectively, of the northern and southern chapters of the California Electragists are Edward Martin, Sterling Electric Co., San Francisco (left) and Glenn Arbogast, president of the Newbery Electric Corp., Los Angeles. Mr. Arbogast has also been president of the state association during the past year, an honor which will now return to Mr. Martin, who was state president in 1929, previous to Mr. Arbogast's election

Northern Chapter Re-elects Martin

Indicating a renewal of activity and the establishment of several new branches of the chapter, the one-day convention of the Northern Chapter, California Electragists, held at Oakland May 21, was considered by officers of the association as an important turning point in contractor-dealer interests in northern California. Edward Martin, former president of both the Northern Chapter and the state association, was elected president to succeed Walter Vance, of Oakland, president for the past year. Mr. Vance presided over the convention, which opened at noon and continued until 10 p.m.

A feature of the convention proved to be reports on the Kansas City meeting of the A.E.I. executive committee and the Federal Trade Commission hearing on the "Fair Trade Practice Rules" for the electrical contracting industry, both made by Clyde L. Chamblin, former A.E.I. president and now national executive committeeman. He also differentiated between the A.E.I. and the Electrical Guild of North America, whose objectives he outlined.

Central station merchandising was an important topic. The Pacific Gas and Electric Co.'s new policy was commended and declared to hold potential benefits as soon as business conditions improve. In the Santa Cruz area dealers were reported not well pleased and the assistance of the association was asked in clearing up misunderstanding existing in that territory. A resolution was passed condemning the granting of discounts on appliances to employees of power companies because of the abuse of such privileges.

Another important resolution passed dealt with the tendency in government projects to supply equipment and award contracts for labor only. This was described as spreading to other types of contract, with the result that manufacturers and jobbers sell equipment direct to a project and an ordinary wireman contracts to install it. This breaks down the contracting business, results in slipshod work by countenancing lack of responsibility, shifts the contractor's position in distribution onto the manufacturer or wholesaler, and hurts the legitimate customer of the latter, it was contended.

The motor section's progress in seeking improved motor distribution policies was reported upon by Frank Sievers, San Francisco motor specialist and national motor section committeeman. The work of the reorganized Pacific Coast Electrical Bureau was described both by Clyde Chamblin and Frank Boyd, of Oakland.

At the election of officers the following were selected: Edward Martin, Sterling Electric Co., San Francisco, president; Thomas Harris, H. S. Tittle Co., San Francisco, vice-president; Wm. A. Cyr, contractor editor, ELECTRICAL WEST, secretary-treasurer; and the following executive committee: George Foss, Sacramento; Roy Butcher, San Jose; Harry Eklund, San Rafael; C. B. Kenney, San Francisco; John Holt, Santa Cruz; and H. H. Courtright, Fresno.

After supper the meeting reconvened. C. B. Kenney made an inspirational talk on the value of association friendship. Harold Gerber, consulting electrical engineer, described revolutionary developments in the electrical art, such as vacuum tube applications, the development of the a.c. network distribution system, fuseless circuit breakers, bare bus riser systems, emergency lighting from water supply, and other possible future trends.

After these talks the proposed fair trade practice rules under advisement by the Federal Trade Commission were discussed and the means of bringing them into effective use was outlined.

President Martin announced at the close of the convention that it was his intention to hold quarterly one-day conventions of this nature during the ensuing year.

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Northwest Inspectors Organize Convention

Under the general chairmanship of E. C. Bushnell, city electrical inspector, Salem, Ore., plans are progressing for the sixth annual convention of the Northwest Section, International Association of Electrical Inspectors, to be held at Salem Oct. 5-7, 1931. Convention sub-committees are headed by the following, who are members of the electrical industry or associated with electrical inspection, all residing in Salem: secretary, W. M. Hamilton, Portland General Electric Co.; treasurer, F. E. Halik, electrical contractor; finance committee, V. P. McNamara, Portland General Electric Co.; entertainment committee, George Todd, electrical contractor; hotel committee, D. A. Wright, Portland General Electric Co.; publicity committee, C. E. Wilson, secretary, Chamber of Commerce; ladies committee, Asel Eoff, electrical contractor; reception committee, William Meyers, electrical inspector, State Bureau of Labor; trips committee, E. J. Summerville, Willamette Valley Supply Co.; and booster committee, C. H. Gramm, state labor commissioner.

A feature of the convention will again be exhibits showing educational features of new development in the industry, including new wiring systems and new materials and equipment. The technical program cannot yet be announced but it will embrace papers by nationally known men in the industry and a thorough review and study of the new articles and changes in the 1931 code.

Golf will figure prominently in the entertainment and the inspector's trophy will be in competition in the annual golf tournament. Special entertainmen is being provided for the ladies.

Salem is rich in possibilities for interesting inspection trips and these will be made available. Several state institutions are located in and around the city and there are, in addition, various industrial plants of interest including a flax mill, paper mill, fruit canning plant, and lumber manufacturing plant.

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Western Men on I. A. E. I. Committees

President R. H. Manahan, of the International Assn. of Electrical Inspectors, chief of the Department of Electricity, City of Los Angeles, named several Western representatives to the national committee of the organization in his recent announcement of the committee personnel. Of the committee on articles of association and bylaws C. W. Mitchell was named chairman. Mr. Mitchell is secretary of the Southwestern Section and is engineer for the Board of Fire Underwriters of the Pacific, San Francisco. On the same committee is L. W. Going, chief electrical inspector, Portland. On the finance committee, F. D. Weber, secretary of the Northwestern Section, Portland, and C. W. Mitchell, were named among others. H. A. Patton, Seattle, and James M. Evans, Los Angeles, were named on the membership committee. On the committee on sections and chapters, E. G. S. Pryor, Seattle, and Carl E. Hardy, Oakland, were named. The committee on publications is headed by H. S. Jenkins as chairman, Bellingham,

Wash., and Edward M. McLaughlin, president of the Northwestern Section. The committee for the investigation of fires and accidents has on it George E. Kimball, engineer, Industrial Accident Commission of California, San Francisco. The committee on standard inspection forms numbers among its members Arthur Veit, electrical inspector, Alhambra, who was prominent in work of this committee for the Southwest Section.

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Alamar Electric Revamps Theater

John Gotchel, of the Alamar Electric Co., Santa Barbara, recently finished a contract for the complete revamping of the Granada Theater at Santa Barbara for the Warner Brothers. This job included installation of all automatic control in the projection booth, and a 60-hp. motor, 300-amp. d.c. generator unit for the new high intensity super-arc lamp houses on the projectors. The dimmer banks were all changed to take care of the new house lighting fixtures, which were increased in lamp capacity. In the marquee everything in the way of lighting was new. A new 2½-in. conduit service to the marquee is an index of the amount of lighting involved in this part of the job alone.

The interior of the play-house was refinished with acoustical plaster for better sound reception. In this booth was installed a Brenograph machine with which to make curtain color effects. This is supplied by a 200-amp. arc, air-cooled lenses, iris effect, etc. A new panel was installed in the operating room with a new contactor board providing circuits for warming up the arc on 80 amp. before throwing on the full load. Corresponding changes were made to the main board also, increasing the service by two new 400-amp. switches. An entirely new E.R.P. sound system was installed, with ear phones for deaf patrons in a reserved section.

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CONTRACT was awarded recently by the Burnaby Muncipal Council of Burnaby, B. C., to F. J. Archer, local electrical contractor, calling for the installation of additional ornamental street lighting facilities on Hastings St., similar to the single installation completed by him about a year ago.

CALIFORNIA ELECTRIC CO., LTD., which recently was formed as the consolidation of the California Electric Co. and the Quality Electric Co. of Oakland, with headquarters at 115 Twelfth St., recently announced the acquisition of the business of B. R. Fritz, electrical contractor of Oakland, who gave up his business to become affiliated with the Alameda municipal lighting plant. The three businesses are to be conducted from the Twelfth St. address under the one shop and management. Officers of this firm are S. S. Rice, C. D. Bronson and J. C. Morello.

Head Estimator

Larry Ellett now heads the Los Angeles Estimators' Section, California Electragists, often termed the livest electrical men's organization in southern California. He was recently elected to succeed P. R. Mactolf, of Glendale. Larry Ellett is estimator for the Quality Electric Works, Los Angeles, and has been prominent in Motor Section activities also

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LAS VEGAS (NEV.) CITY COUNCIL has had submitted to it for first reading a new electrical ordinance setting a $500 initial city license fee for electrical contractors with a $25 fee to be paid by those already in the business in the city. This was drawn as a measure to protect local business enterprise from a large influx of "fly-by-night" electricians drawn to the city during the construction of the Hoover Dam project. The electrical people are represented by Dan V. Noland, attorney, who will present the case for the ordinance.

RADELFINGER BROS., San Francisco electragists, were recently awarded the contract for wiring the modernistic new Paramount Theater being built in Oakland.

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New Page

Some years back Jim Page took over the Field Electric Co., of San Bernardino, then one of the prize winning electrical stores of the West. The Page Electric Company not only has maintained but has added to that tradition as a contractor-dealer establishment

Interesting Installation At Mountain Lodge

Smith-Heumphreus Electric Co., of Santa Barbara, recently installed an interesting control device for a mountain lodge in the mountains back of Santa Barbara. Far from the power lines, the lodge is supplied with energy by means of a 10-kw. and three 5-kw. farm lighting plants. Besides operating the lighting and floodlighting around the private lodge and a pipe organ in the building itself, the unusual feature of the installation is in the set of three remotely operated gates on a waterfall and dam. Water falls from a reservoir over a cliff 100 ft. high upon the operation of three gates remotely by push button control from the lodge. A motor and pinion gear arrangement operates the gates. At the end of the swing of the gate and at each of the open and closed positions a reversing switch is placed which stops the operation of the motor and reverses the polarity so that with the next operation of the push button from the lodge the reverse action is obtained on the motor.

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AN UNDERFLOOR DUCT SYSTEM, both for lighting and low-tension installations, was used by Hume and Rumble, Vancouver (B. C.) electrical contractors for the building, in the banking floor space of the new 21-story Royal Bank Bldg. at Vancouver. The building was opened early in June. It is served, through its own trasformer vault, by four 150-kva. transformers from two three-wire, 2,300-volt services, and is arranged for a future four-wire service. There are approximately 2,400 outlets in the building. Each floor is provided with interconnection cabinets to facilitate wiring for telegraph or other low-tension uses to any office in the building.

THE SAN DIEGO BALL PARK was equipped for night play by the Airport Electric Company, of San Diego, not long ago. Sixteen Giant reflectors, each equipped with three 1,500-watt lamps burned at 8 per cent over-voltage, were mounted on 60-ft. poles. The control was arranged on switches so that one-half or all of the light on the field could be turned on at the option of the manager.

SPOT ELECTRIC CO., of Oakland, recently completed the wiring of the new I. Magnin store on Broadway in Oakland.

FRANK G. LYNN, formerly superintendent for the C. A. Langlais Co., of San Francisco, and superintendent particularly on the Shell Oil Bldg. construction, and M. O. ("Bud") Droit, formerly also with the same company, have just announced the opening of their new contracting business in San Francisco. The firm name is Lynn & Droit with address at 2445 Ulloa St., San Francisco.

Manufacturer Distributor

Three More Manufacturers On Garnett Young List

From Garnett Young, vice-president and general manager, Garnett Young & Co., San Francisco, it is learned that effective July 15 that company will make important changes in its agencies.

On that date the company will assume Pacific Coast representation of Appleton Electric Co., of Chicago, makers of outlet and switch boxes, connectors and other conduit fittings; the Columbia Cable & Electric Co., Long Island City, N. Y., manufacturer of ABC cable, flexible steel conduit and non-metallic sheathed cable; and Walker Bros., of Philadelphia, makers of sherardized and enameled rigid conduit and originators of a steel underfloor distribution system.

Garnett Young & Co. on July 13 will relinquish its representation of National Electric Products Corp., a relationship which has been in force for 28 years.

In addition to the three manufacturers mentioned above, the Young company now represents Chicago Signal Co.; Hart & Hegeman Mfg. Co.; Harvey Hubbell, Inc.; Simplex Wire & Cable Co.; and Stromberg-Carlson Telephone Mfg. Co.

The coastwise business of Garnett Young & Co. has been long established and its various factory connections date back many years. Since 1906 the company's operations have been under the direct management of Garnett Young; F. G. Larkin, R. J. McHugh and R. B. Peterson, directors, have been in charge of sales operations respectively in Seattle, Los Angeles and San Francisco. Other executives of the company are Charles L. Tilden, president; E. C. Kinsey, secretary; and S. L. Hawkins, business manager.

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Instruction Card for Welding Aluminum

A card of instructions for welding aluminum has been prepared by the Aluminum Co. of America for the guidance of metal workers. The card is designed so that it may be hung up in the shop for ready reference.

Rules for the use of torch welding with either oxyhydrogen or oxyacetylene flame, metallic arc welding and carbon arc welding for aluminum sheets of various thicknesses are given on the card, and the proper procedure to be followed when using either of these three methods is clearly stated.

For more detailed information on the welding of aluminum, the Aluminum Co. has issued a booklet, "Welding of Aluminum."

Copies of the card and booklet may be obtained by addressing the Aluminum Co. of America, Pittsburgh, Pa.

Frigidaire Manager Now With Westinghouse Co.

Ivan L. deJongh, recently appointed refrigeration manager of the Westinghouse company's Pacific Coast merchandising department, has arrived on the Pacific Coast after an extended trip through the East, during which he visited the Westinghouse plants in Mansfield, Ohio, East Pittsburgh, Pa., and East Springfield, Mass. He also visited a large number of the eastern distributors of Westinghouse refrigerators.

Mr. deJongh's business career has given him wide and varied experience.

IVAN L. deJONGH

From 1900 to 1915 he was associated with the White Automobile Co. in sales and service work. At the end of that period he left for China to make a transportation survey for the Chinese government. Shortly thereafter he became affiliated with the Delco Light Co. in San Francisco, and traveled through China, Japan and the Far East in the interests of that organization. In 1916 he was appointed distributor for the Delco Light Farm Lighting plants in California. Nine years later he sold his distributorship to the company and was retained as southern California branch manager of the Frigidaire division, a position which he has held during the past six years. He has established an enviable reputation for the sale of electric refrigerators in southern California.

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Geo. H. Eberhard Co. Representing Dormeyer

Appointment of the The Geo. H. Eberhard Co., San Francisco, as its Pacific Coast representative has been announced by A. F. Dormeyer Mfg. Co., Chicago, manufacturer of the Dormeyer electric food mixer and fruit juice extractor.

The Eberhard company is already known to the electrical trade of the West as the distributor of the Waterbury electric clock line. Headquarters are in the company's own building at First and Folsom Sts., San Francisco, and divisional offices are maintained in all the principal Pacific Coast cities. The company also acts as distributor for several lines of non-electrical merchandise.

Officers of the Eberhard company are: president, Geo. H. Eberhard; vice-presidents, V. P. Strite and H. H. Hansen; treasurer, Miss M. L. Power. A. C. Kienly, San Francisco; R. F. Vernier, Los Angeles; F. E. Johnson, Seattle; and M. J. Hughes, Oakland, are in charge of the sales organizations in the cities named.

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G. E. Appliance and Supply Sales Divided

In order to give closer study to the two major branches of the electrical industry—construction and transmission, and merchandising—the General Electric Supply Corp. recently announced a division of its sales organization, placing supply sales and appliance sales in two departments with a division manager in charge of each.

Under the new set-up, managership of the company's offices in Portland, Seattle, San Francisco and Los Angeles is as follows:

Portland: G. A. Boring, division manager; C. C. Creighton, division manager supply sales; R. A. Pearson, division manager appliance sales.

Seattle: A. J. Lutz, division manager; Fred Block, division manager appliance sales. (No supply sales manager appointed.)

San Francisco: Fred C. Todt, division manager; C. W. Goodwin, Jr., division manager supply sales; E. M. Frellson, division manager appliance sales.

Los Angeles: F. J. Airey, division manager; C. H. Thrane, division manager supply sales; A. W. Kreuger, division manager appliance sales.

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HERBERT J. MAYO, formerly with the General Cable Corp., Los Angeles, has joined the Los Angeles sales staff of Garnett Young & Co.

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It Must Have Been Funny!

"Have you heard the one about the Irishman?" says General Electric Supply Corp.'s Frank Airey (with the tie) to A. E. Hitchner, of Westinghouse, between holes at the Los Angeles Electric Club's annual golf tournament in April

Standard Electrical Code Ready for Publication

A broadside just issued by the industry joint committee of the National Electrical Manufacturers Association, New York, announces the publication of "LCODE," a standard telegraph code created to apply to every field of electrical operation.

The pamphlet, entitled "Realizing an Idea for the Electrical Industry," carries one page of specimen telegrams to show that the electrical industry can save from 40 to 70 per cent in the cost of telegraphic communication after Sept. 1 through the use of the code.

A wholesaler message of 94 words from Tacoma to Newark, N.J., for instance, sent straight would cost $8.34 as against 25 words for $2.48 when sent in "LCODE." A utility wire from Laredo, Texas, describing a short circuit and pleading for immediate delivery of replacements from St. Louis takes 90 words, costing $4.72 uncoded, but goes for $2.87 with 53 code words.

The joint committee on telegraph code, representative of the Electragists, N.E.L.A., N.E.M.A., National Wholesalers, Radio Manufacturers and Wholesalers, and the Society for Electrical Development, has been working on "LCODE" for nearly a year through a subcommittee.

List price of the code is announced as $6. This may be reduced to $5.50 if a sufficient number of pre-publication orders are received. Twenty-five per cent may be deducted from pre-publication orders. Association membership in one of the cooperating groups entitles such members to an additional discount of 10 per cent. Quantities of 10 or more copies are subject to additional discounts as follows:

10 to 24 copies	10 %
25 to 49 copies	15 %
50 to 99 copies	25 %
100 to 199 copies	33⅓ %
200 or more copies	40 %

To obtain the pre-publication discount orders must reach The Business Code Co., Inc., 2 Rector St., New York, not later than July 10, 1931. If in final compilation it is found necessary to increase the number of pages, 25 cents will be added to the list price for each additional 32 pages.

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KELVINATOR DISTRIBUTOR—A newly appointed Kelvinator distributor in Colorado is the Calkins White Brothers Furniture Co. at Pueblo.

RALPH HUNNER, Pacific Coast manager of the L. D. McFarland Co., Ltd., Sandpoint, Ia., producer of Western red cedar poles, has moved his headquarters from Milwaukie, Ore., to Sandpoint for the summer. Mr. Hunner will be in charge of operations of the company during the absence in Europe of L. D. McFarland, president of the company. The McFarland company is represented on the Pacific Coast by Maydwell & Hartzell, Inc.

RALPH WHALLEY, former advertising manager of the Pacific Electric Mfg. Corp., San Francisco, has been assigned to sales work in the San Francisco district. He is succeeded as advertising manager by Max Toby, who has been in the engineering department of the company for some time.

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Hotel Supply Co. Features Edison Equipment

Display of Hotpoint heavy-duty hotel cooking equipment at the Dohrmann Hotel Supply Co.'s sales rooms in San Francisco. A selling campaign featuring Edison General Electric Appliance Co. commercial cooking and baking appliances is carried on each spring by all Dohrmann company stores in the principal Pacific Coast cities. During one month 582 pieces of equipment valued at approximately $90,000 were sold. These sales were made by the regular sales force of the Dohrmann company

VOSS COMPANY OFFICIALS PACIFIC COAST VISITORS—Pacfic Coast distributors of Voss washing machines and dealers attended dinner meetings during June in Los Angeles, San Francisco, Portland, Seattle and Denver, when officials of Voss Bros. Mfg. Co., Davenport, Iowa, visited the cities named. On the Western tour were William Voss, president; Fred Voss, vice-president; and E. F. Voss, sales manager. In Los Angeles a banquet was held June 9 under the auspices of Listenwalter & Gough, Voss company's southern California distributors. Kaemper-Barrett Corp., Ltd., northern California distributor, was host at a similar banquet held in San Francisco June 11 attended by dealers throughout the northern part of the state, and subsequent meetings were held in Portland, Seattle and Denver.

CHANGES IN CANADIAN PREMIER CLEANER SET-UP—The Western territory of the Canadian Premier Vacuum Cleaner Co. organization is now being divided into two sections, one being operated from Winipeg, and one from Vancouver. W. C. Clarke, who up to now has been manager of the Vancouver branch of the Premier organization, has been appointed district manager for the whole of British Columbia and Alaska. Mr. Clarke came to Vancouver from Toronto to assume the position of manager of the Vancouver branch about five months ago.

ELECTRICAL PRODUCTS CORP., of Los Angeles, has created a national sales department under the direction of W. R. Skiff, formerly with Rainbow Luminous Products. J. X. Kennelly, who until April 1 was advertising manager of the Goodyear Tire & Rubber Company of California, is divisional manager in Southern California; John R. Blair, formerly with the J. Walter Thompson Company, is divisional manager for San Francisco, Oakland and the Northwest.

THE SAN FRANCISCO LIGHTING FIXTURE CO. has established headquarters at 935 Mission St., San Francisco, for the manufacturing, wholesaling, and jobbing of special lighting fixtures. The new company occupies two complete floors. R. W. Pelton is manager.

THE SPECTOR CO., San Francisco, Pacific Coast distributor of Hammond electric clocks, moved early in June from its former headquarters in the Rialto Building to larger offices at 1663 Mission St.

F. J. MCCLUSKEY, formerly superintendent of distribution for the Utah Power & Light Co. at Park City, Utah, is now associated with the James R. Kearney Corp., St. Louis, Mo. Mr. McCluskey was at one time with the Los Angeles Gas and Electric Corp.

New Products

Hotpoint Ranges

Four new models make up the new popular-priced line of ranges of the Edison General Electric Appliance Co., 5600 West Taylor St., Chicago.

A feature of these new ranges is the new 2,100-watt giant, Hi-Speed Calrod surface unit with stainless steel sheath. One of these burners is standard equipment on each of these four new models.

Models RA134 and RA136 have two Hi-Speed Calrod surface units, utility size, 6¼ in., 1,200 watts, one 8⅛-in. burner, 2,100 watts, and two interchangeable open coil oven units, rated at 1,320, 660 and 330 watts each in RA134 and at 1,500, 750 and 375 watts in RA136. Range RA134 is slightly smaller in size and has a smaller oven than RA136.

Models RA146 and RA148 have surface units similar to those described and in addition, have a thrift cooker, rated at 660, 120 and 100 watts. Oven units in these models are rated at 1,500, 750 and 375 watts. RA148 is slightly larger in size than RA146.

The ranges are finished in two-tone silverwing gray and white porcelain enamel, with bright parts finished in chrome plate. Automatic oven timer and modernistic clock may be had as optional equipment—ELECTRICAL WEST, July 1, 1931.

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Everhot Cooker

To meet the demand for a cooker of larger capacity than its original EC Jr. 10 model, the Swartzbaugh Mfg. Co., Toledo, Ohio, is introducing its new EC-15 cooker. This new model is larger in all dimensions and has greater capacity and more equipment. It is 15 in. high and 12 in. in diameter over all. Its net weight is 14 lb. The body of the cooker is of chromium-plated steel, trimmed in black. It has two heats, 600 watts high heat and 175 low. It will accommodate a 7-lb. roast and three vegetables.

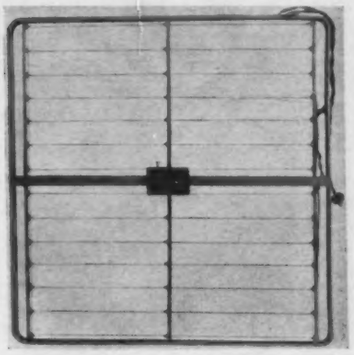
Equipment consists of two heavy gage aluminum utensils—one 4-qt. capacity and one 3-qt.—trivet and utensil lifter. Retail price, $16.50.—ELECTRICAL WEST, July 1, 1931.

Electric Plant Grower

A new method of applying electricity to growing plants is announced by Electromaster Inc., of Detroit, who are now marketing a heating unit for use in outdoor hotbeds and for indoor plant germination.

The unit follows the general pattern of the Electrochef oven element, except that it operates at low temperature at 115 volts and is rated at 275 watts. The unit is portable and can be plugged into any convenience outlet. The desired range of temperature is automatically provided for by an adjustable thermostat.

A large potential market is expected for the unit among commercial gardeners and amateur growers of flowers and vegetables in minature greenhouses. The device is 33 in. square and will heat an outdoor area of 3 x 6 ft. The list price of the unit, including thermostat, is $10.—ELECTRICAL WEST, July 1, 1931.



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Universal Iron

Adjustable automatic control and a round heel that permits ironing backward and sideways as easily as forward without wrinkling the fabric are features of a new Universal 1,000-watt iron of Landers, Frary & Clark, New Britain, Conn. The iron is chromium plated and weighs 6 lb. List price, $8.95.—ELECTRICAL WEST, July 1, 1931.

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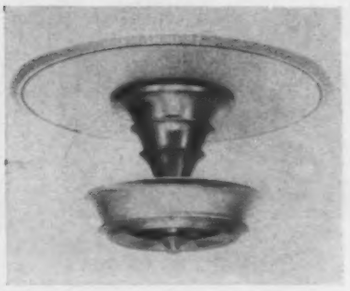
Heater Cords and Plugs

An assortment of five different colored cords with colored, Belden soft rubber plugs to match has been added to its heater cord set line by the Belden Mfg. Co., 5689 West Van Buren St., Chicago. The cords are packed in an attractive counter display carton.—ELECTRICAL WEST, July 1, 1931.



Duo-purpose Fixtures

In a new line of lighting fixtures manufactured by the Ivanhoe Division of The Miller Co., Meriden, Conn., known as Duo-purpose fixtures, two circuits are employed, one using ordinary Mazda lamps for general lighting for vision, and the other using the General Electric S-1 sunlamp for ultra-violet radiation.

The new Duo-purpose fixtures make it possible to obtain ultra-violet light at home, at work or at play indoors from a central type ceiling fixture. The fixtures are made in two types. The "direct semi-indirect" type is for use where good general illumination is essential and a maximum of direct ultra-violet radiation is desired for use over a relatively short period of time. The indirect type produces a high level of general illumination and the ultra-violet component of the unit is so embodied in the fixture as to permit its use over longer periods of time.

The fixtures operate on 105-120-volt, 60 cycle a.c. service and are obtainable in a variety of decorations and finishes.—ELECTRICAL WEST, July 1, 1931.

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Telechron Clocks

Several new electric clock models, ranging in price from $9.75 to $55, have been announced by the Warren Telechron Co., Ashland, Mass.

Included in the new line are the "Salisbury," retailing at $9.75, which is in genuine high-lighted mahogany in Gothic design with 3½-in. gold-finished dial; the "Alden," $12.50, which is virtually the same

clock in design but has an alarm movement; the "Bristol" (illustrated), $11, finished in Spanish high-lighted mahogany with a 4-tone inlay border and 3½-in. gold finish dial; and the "Trenton," $12.50, a mahogany tambour with satinwood ornaments. This clock is 13 in. in width and 5¼ in. high, with 3½-in. gold-finished dial.

The "Apollo" modernistic model is now being offered in color—in ivory, green, blue and red, in addition to the black beetle and chrome model introduced last year at $15. An apaptation of the "Apollo," called the "Diana," is also being offered, at $18, in the same colors but with a Lumite translucent dial, illuminated by means of small electric lamps which distribute an even glow over the entire dial. The clock is also provided with rheostat to control the intensity of the light.

Among other new designs now in production at the Ashland plant are three uprights and three tambours, all in mahogany and ranging in price from $11 to $29.50. The "Hostess" model has been redesigned and is now being offered in seven colors.—ELECTRICAL WEST, July 1, 1931.

Sunbeam Clocks

Electric clocks in a variety of designs have been added to the line of Sunbeam appliances made by the Chicago Flexible Shaft Co., and distributed in the West by Sandoval Sales Co., 557 Market St., San Francisco. Clocks in solid mahogany and walnut cases for the living room range in price from $18.75 to $35.50. The design and workmanship in the cases of these clocks make them unusually distinctive and attractive in appearance.

Illustrated are the Corsican model (above), with black and oriental walnut case, height 7 in., width 12½ in., silvered dial, 4¾ in., and the Sheraton, with dark striped walnut case and black walnut base, height 9¼ in., width 8 in., silvered dial 4¾ in. Both of these models retail at $22.50.

Three kitchen clocks are included in the line, in octagonal, square and round shapes, priced at $9.75, $10 and $10.25.—ELECTRICAL WEST, July 1, 1931.

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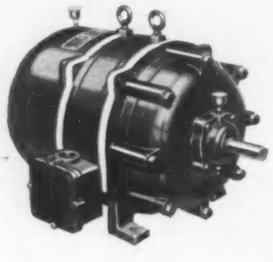
Totally Enclosed Motors

Development of a new motor that bears the approval of the Underwriters' Laboratories for Class 1, Group D, is announced by the Howell Electric Motors Co. Howell, Mich. This classification covers use in gasoline vapor and air mixture or lacquer solvent and air mixture. The motor is built in either polyphase or single phase design with a totally enclosed frame or a totally enclosed fan cooled frame. The motor illustrated shows the totally enclosed fan cooled frame.

Polyphase motors in this line are of squirrel-cage construction with extra heavy castings, bolts, and parts. All machined parts have large fitting surfaces to correspond with the Underwriters' Laboratory requirements for this class of service. The single phase motors are of squirrel-cage construction similar to the polyphase motors. These motors are of the condenser start type, each motor having a condenser starting unit placed in a separate box which must be mounted outside the hazardous area.—ELECTRICAL WEST, July 1, 1931.



Welder for Small Jobs

An electric welding torch that operates from an ordinary 110-volt or 220-volt a.c. lighting circuit is being manufactured by the Warner Engineering Co., of Pomona, Calif. By means of a transformer coil arrangement and a magnetic effect a smooth, steady flame is produced between carbon electrodes.

Models operating on 110 volts will weld virtually all metals including aluminum and can also be used for hard soldering with german silver and silver solder. The 220-volt models are for heavier work, and a special 220-volt welder is made that in addition to the flame feature can be used for carbon and metallic arc welding.

The flame produced between the carbon electrodes is extremely flexible in use and is non-oxidizing. Heat control is obtained by using different switch taps in the transformer box and by varying the distance between the electrodes. Flame volume may be regulated by using electrodes of different sizes.

Ease of portability of the device and the convenience of power always available to any electric socket, make the welder adaptable to almost any kind of work. Because of the low initial cost of the equipment and its small operating cost, general shop work and small jobs can be handled profitably with this welder. Almost anyone with a mechanical turn of mind can learn to operate the welder successfully within a short time, according to the manufacturer. —ELECTRICAL WEST, July 1, 1931.

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Handy Floodlight

A 100-watt general-utility floodlight projector, the Novalux handy floodlight, has been announced by the General Electric Co. Much smaller and less expensive than the usual projectors, the new unit is expected to find new fields of application in households, on farms and estates, in and around garages, at wayside and road stands, and in other uses where light requirements do not necessitate the larger, standard floodlighting units.

The projector, weighing less than 3 lb. and measuring less than 9 in. wide, 10 in deep and 13 in. high with its supporting stand, is built for a 100-watt inside-frosted general-service incandescent lamp with 4⅝-in. light center and medium screw base. List price, $8.40.—ELECTRICAL WEST, July 1, 1931.

New Curtis Adapters

The line of Adapters made by Curtis Lighting, Inc., Chicago, to provide general overhead lighting, indirectly, when installed on an ordinary portable lamp, has been augmented by the additon of two new units, the No. 2,700 for the 200- or 300-watt lamp, and the No. 2,848 for the 300- or 500-watt lamp.

The new units differ from other Adapters in that they are not equipped with auxiliary sockets for local, direct lighting. They do, however, provide a soft light to the shade at all times, and are especially suited to the type of portable on which the regular small lamps can be utilized for the local, direct lighting. On other types of portables they serve as a permanent, indirect lighting unit with a luminous shade. They can be installed on either new portables, or those now in use, by anyone familiar with electrical wiring.—ELECTRICAL WEST, July 1, 1931.

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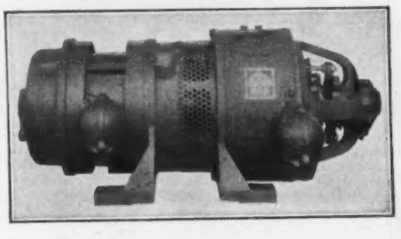
One-Unit Motor-Generator

A one-unit motor-generator set for ratings of 1 to 5 kw. has been developed by The Reliance Electric & Engineering Co., Cleveland, Ohio.

In this set the usual a.c. motor and d.c. generator are combined into a single unit, requiring only two bearings—one at each end. The induction-motor rotor and d.c. armature are mounted on the same shaft. This design provides a rugged, compact construction requiring less space than with the two-unit sets. Because it is one unit the work of connecting and aligning individual units is eliminated. The conduit outlets are large, making wiring easy.

These sets can be furnished for operation on either two or three-phase circuits of any standard voltage or frequency and have an output rating of 1 to 5 kw. at 125 or 250 volts. They may be obtained with either sleeve or ball bearings.—ELECTRICAL WEST, July 1, 1931.



Lock-Type Toggle Switches

A complete new line of lock-type, toggle flush switches is announced by Cutler-Hammer, Inc., 234 North Twelfth St., Milwaukee, Wis. Totally enclosed, dustproof construction, together with remarkably quiet action (the switching mechanism is mounted on two soft, springy rubber pads) make these new switches particularly suitable where a lock-type switch is desired.

Quick make and break, self-cleaning contacts of heavy phosphor bronze prevent "bounce" and "pitting" and assure long wear, the manufacturer says. Heavy compression-type operating spring with lubricating spring sleeve gives automatic kick-off and assures quick action. The body and cover are of tough, heavy-walled Thermoplax which does not chip easily, thus greatly reducing breakage in handling and installing. The switches fit all standard toggle switch plates.

Catalog numbers for these new spitches are: single pole 7,291; double-pole 7,292; 3-way 7,293; 4-way 7,294; and operating key 7,295. The single pole No. 7,291 is illustrated with a close-up view of the rubber mounted switching mechanism. All of these devices are approved by the Underwriters' Laboratories.—ELECTRICAL WEST, July 1, 1931.

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Wiring Assembly for Street Lighting Brackets

A new wiring assembly for street lighting brackets, introduced by the General Electric Co., eliminates the slow and expensive hand labor previously necessary in wiring brackets.

The over-all jacket of the bracket end of the cable is stripped back approximately 1 ft. A rubber strain-relief fork is molded on the cable at this point. In addition, the insulation on the individual conductors of the two-conductor cable is stripped from the copper for a distance of 1 in. The bare copper ends are then soldered, resulting in a compact terminal for insertion in the lighting unit binding posts.

The complete cable with manufactured fork and terminals is available in lengths of 17, 20 and 25 ft., in sizes 10 to 4, inclusive, and insulated for 600 volts between conductors, and 2,500, 3,500, 5,000, and 7,500 volts to ground.—ELECTRICAL WEST, July 1, 1931.

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Flexlay Cable

A new underground cable, known as Flexlay, has been designed and is being manufactured by the National Electric Products Corp., Pittsburgh. It is a flexible, highly insulated underground wiring system and is produced in three different types: non-metallic, semi-metallic and full-metallic which is better known as Parkway cable. Flexlay cables may be laid in open trench without damage from abrasive handling, eliminating the use of clay or fiber ducts. They are so constructed as adequately to resist the action of soil textures, soil acids and prevailing moisture contents.—ELECTRICAL WEST, July 1, 1931.

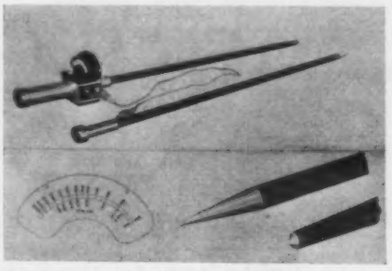
Earth Resistivity Meter

As a result of the study of corrosion on underground pipes, which the Bureau of Standards has been carrying on for several years, a new instrument has been developed for simply and quickly measuring the electrical resistivity of soil in place, without the necessity of removing samples to the laboratory for examination. The bureau has found that soils high in soluble salts, and therefore low in electrical resistivity, are usually highly corrosive to pipe lines. Such low resistance soils are frequently found as naturally occurring outcrops or pockets in areas of otherwise normal or high resistivity. The predetermination of such areas will enable pipe line companies as well as utility operators to provide suitable protection to their pipes in exceptionally corrosive soils.

The Shepard earth resistivity meter shown in the illustration consists of two rods or canes tipped with iron electrodes. A flashlight battery and milliammeter are mounted in a light aluminum frame on one of the rods. The rods are pushed into the earth with a separation of about 1 ft. or more, at the bottom of a pair of auger holes, a shallow excavation, or the side of an open trench. The circuit is then closed and the resistivity of the soil is read directly in ohm-cm. on the scale of the instrument.

A feature of the apparatus which is unique is the manner in which polarization has been overcome or minimized and by which an accuracy closely approaching a.c. bridge determinations has been attained. This has been accomplished by making the cathode very much larger than the anode, as shown in the accompanying figure. Polarization is greatly reduced by employing electrodes differing greatly in areas.

Two scales are provided on the meter, one ranging from 400 ohm-cm. upward and the other from 100 to 500 ohm-cm. Provision is also made for checking the voltage of the three-volt flashlight battery carried in the handle of the rod. The meter, which was developed by E. R. Shepard, of The Bureau of Standards, is being built and distributed by O. S. Peters, of 930 H St., N. W., Washington, D. C. It is already being employed by several pipe line companies in Texas and California in connection with their reconditioning programs.—ELECTRICAL WEST, July 1, 1931.



Trade Literature

¶ VENTILATORS, FANS AND AIR CONDITIONING EQUIPMENT—Four new publications have been issued by the B. F. Sturtevant Co., Hyde Park, Boston, Mass. In catalog No. 377 the company describes and illustrates its partial recirculating type flexible unit ventilator; bulletin No. 385 gives a complete description of the new Sturtevant propeller fan, together with price lists for various models and sizes; and catalogs Nos. 383 and 384 cover respectively the "humidifilter" (an air conditioning unit), and the company's suspended type air conditioning units.

¶ SILENT TYPE MOTORS—An imposing presentation of California buildings using Sterling motors appears in a recent folder distributed by Sterling Electric Motors, Inc., Los Angeles.

¶ SWITCHES, STARTERS, PANELBOARDS—A new general catalog, comprising the complete line of the Diamond Electrical Mfg. Co., Ltd., and the Square D Co., with which it is affiliated, has been issued by the Diamond Electrical Mfg. Co., Ltd., Los Angeles.

¶ TRANSFORMERS—A fifth edition of a booklet entitled "Instructions for Care and Operation of Transformers" has been issued by the National Electrical Manufacturers Association, New York. The new edition of this work has been carefully revised and edited so as to contain the latest available information. It supersedes the fouth edition of April, 1926.

¶ ELECTRIC CLOCKS—A new catalog of the Reverse Clock Co., Cincinnati, Ohio, illustrates 41 floor, wall and mantel models in its line of Telechron-motored strike and chime clocks, ranging in price from $30 to $600.

¶ IMMERSION HEATERS—Bulletin No. 250 of H. O. Swoboda, Inc., Pittsburgh, Pa., is a supplement to this firm's various publications on large melting and coating tanks for asphalts, tars, compounds, oils, varnishes and similar viscous substances. The present bulletin points out the advantages of tubular electric over tubular fluid immersion heaters.

¶ RANGE CATALOG—Several new models of Standard electric ranges appear in catalog No. 31 of the Standard Electric Stove Co., Toledo, Ohio. The catalog is unusually complete, and offers some new conceptions of the electrical cooking idea.

¶ LIGHTING FIXTURES—Porcelain enameled "Aglite" wall and ceiling lighting fixtures offered by The Edwin F. Guth Co. in a wide choice of colors for a variety of uses are shown, with description and price of each unit, in a recent mailing piece of that company.

¶ HOTPOINT RANGES—The 1931 General Electric Hotpoint range catalog, just issued, contains much readily available sales information for the use of range salesmen when talking to prospects. Descriptions of Hotpoint water heaters and air heaters are included in the catalog, as well as information on clocks and other range accessories.

¶ MOTOR BRUSHES—In its catalog No. 12 the Boxill-Bruel Carbon Co., Columbia Park, Ohio, explains the characteristics of its line of standard and special brushes for motors, generators and rotary converters, and recommends the style of brush best suited to various applications.

¶ PLUGS, RECEPTACLES—Plugs and receptacles, type M-1 series, for power and signal equipment, manufactured by Cannon Electric Development Co., 420 West Ave. 33, Los Angeles, are listed and illustrated in a recent bulletin of this company. Prices are included.

¶ LIGHTING DATA—Two new lighting data sheets for addition to the loose-leaf "Lighting Data Manual" of the Benjamin Electric Mfg. Co., Des Plaines, Ill., give layouts and specifications for the lighting of miniature golf courses, putting greens and pitch and putt courses with the new Benjamin play-area floodlight, and for the lighting of hydraulic auto lifts with Benjamin pit lighting fixtures.

¶ INDUSTRIAL APPARATUS—The following bulletins have recently been added to its list of such literature by The Electric Controller & Mfg. Co., Cleveland, Ohio:

No. 910: "Separator Magnets for Removal of Tramp Iron."

No. 1042-G: "110-550-Volt Automatic Compensators for A.C. Squirrel Cage and Synchronous Motors."

No. 1062: "Types ZHS 2300-Volt Magnetic Contactors for A.C. Motors, Non-Reversing and Reversing."

No. 1088: Motor Field Rheostats and Relays for Adjustable Speed D.C. Motors."

No. 1105: "Standard, Vapor-proof and Explosion-proof Push Buttons."

¶ HOOVER DAM—The history of Hoover Dam, beginning with the discovery of the Colorado River, is attractively set forth in a booklet entitled "White Gold" being distributed by The American Steel & Wire Co., 208 South La Salle St., Chicago.

¶ CONTROLLING APPARATUS—The catalog of Allen-Bradley Co., Milwaukee, has been brought up to date by the addition of a number of revised bulletins and price sheets on the company's contactors and switches.

¶ SQUIRREL CAGE MOTORS—Seven types of squirrel cake motors are described in bulletin No. 165 recently released by the Wagner Electric Corp., 6400 Plymouth Ave., St. Louis.

Barometer

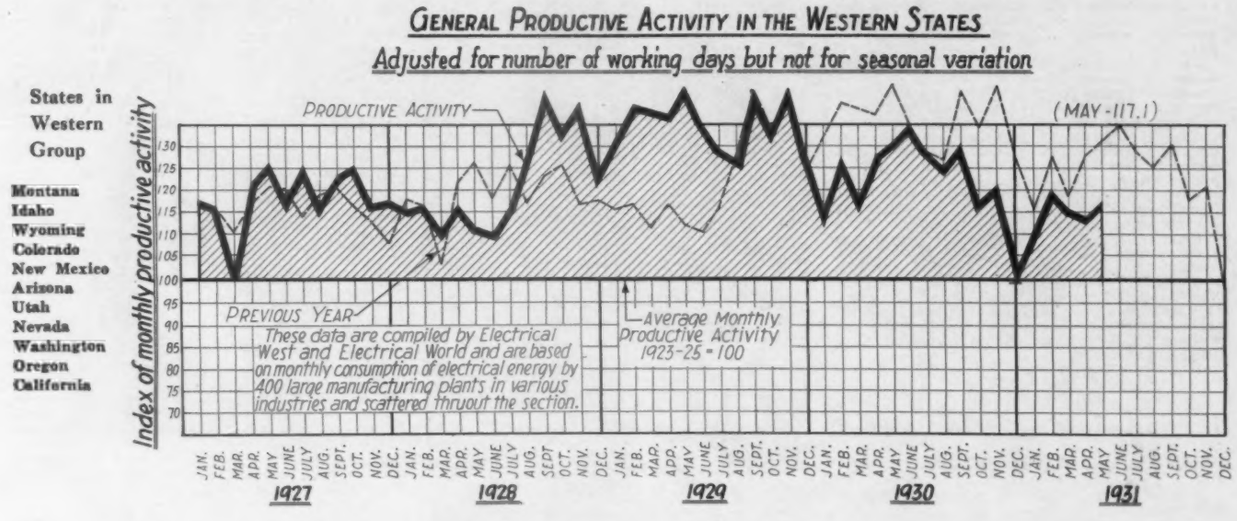
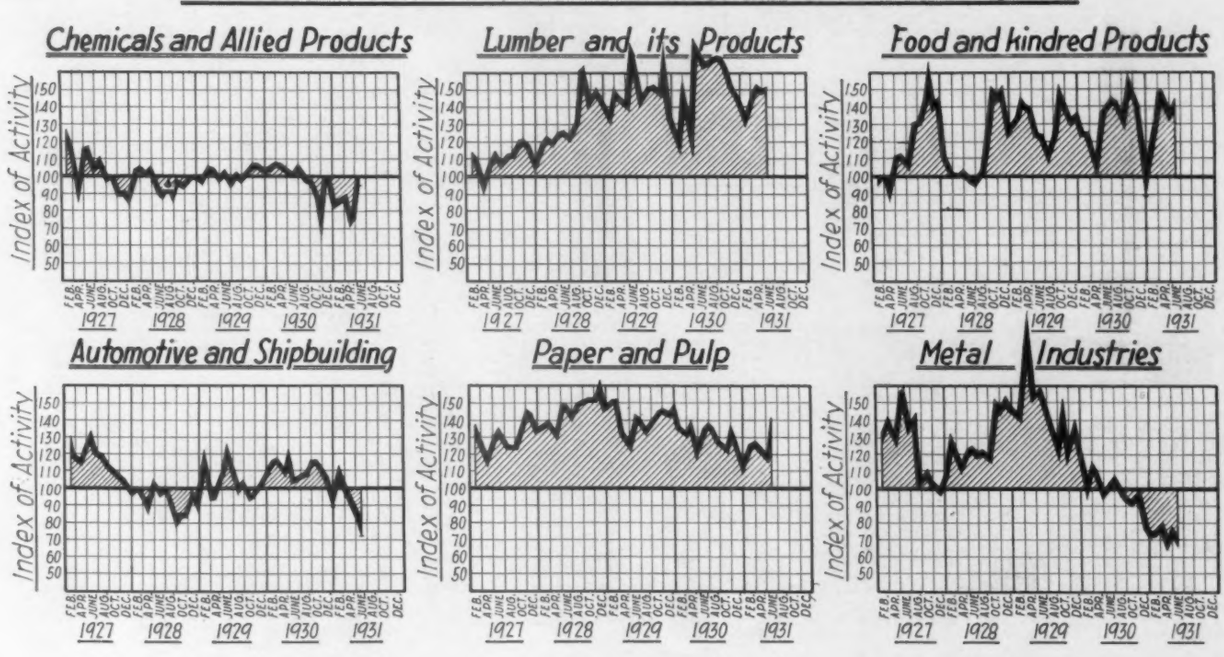
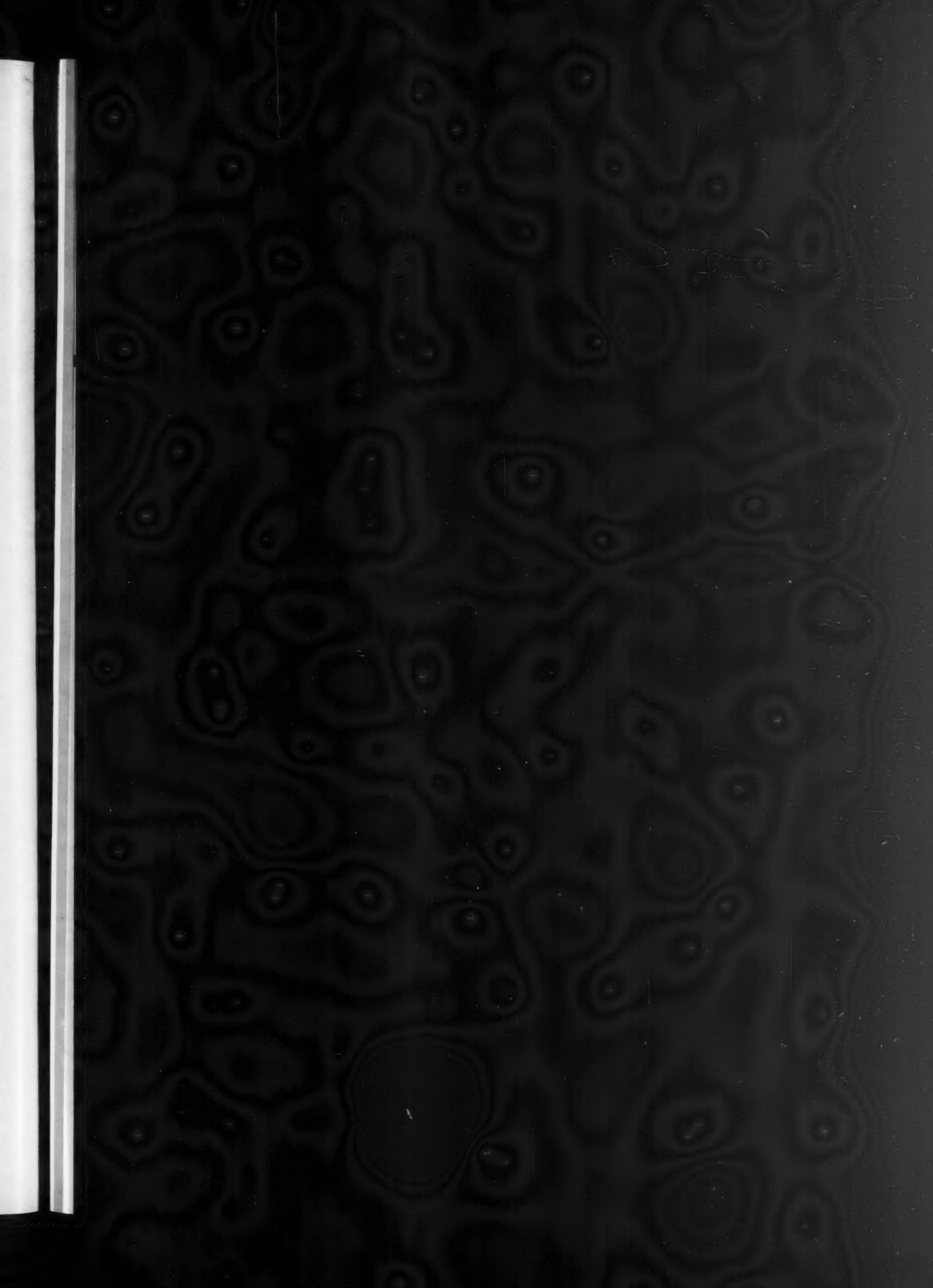
GAINS in most industrial lines are shown by returns of electrical energy consumption of Western manufacturing establishments for May, the weighted average being 3 per cent higher than in April and well above the average for the past six months, though 10 per cent below May last year.

Food products manufacturing continues at a high level, the May index exceeding that of any previous May in this series of records, which goes back to 1923. The lumber industry continues on a level with the two preceding months, surpassed in May only in 1929 and 1930, and only 17 per cent short of the extreme spring peak of 1929.

The notable increase in paper manufacture (18 per cent) was general and not due to the influence of any one large mill. Rubber, rising 7 per cent from April, is 58 per cent above the December minimum, that being commonly the lowest month of the year.

The chief exception to the general improvement is in the metal industries, which continue at the lowest level of the past eight years. The unusually low index figure for the stone, clay and glass group may be improved if reports missing at the time the figures were compiled show higher activity than those in hand.

Indexes of Industrial Activity in the Western States

(All figures adjusted for number of working days.)

	May 1931	April 1931	March 1931	May 1930	Average First Five Months 1931	Average First Five Months 1930
All Industry	117.1	114.0	115.7	130.5	115.3	123.6
Chemical and allied products	95.2	75.2	71.8	102.9	82.0	106.5
Food and kindred products	144.8	138.1	148.4	141.4	141.1	127.9
Forest products	151.5	150.1	152.1	169.2	147.3	150.8
Metals group	67.6	71.4	64.1	99.5	69.8	102.5
Paper and pulp	142.8	120.6	125.3	132.2	128.7	132.6
Rubber and its products	166.0	155.6	155.0	180.0	161.3	169.4
Shipbuilding	71.9	82.0	88.7	106.3	90.2	114.7
Stone, clay and glass	60.5	94.6	94.9	94.9	90.0	97.5